

CIO

Why Does Customer IT Flop? Page 26

Enterprise

S E C T I O N

JUNE 15, 1999

162 PAGES IN
TWO SECTIONS

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Care Enough
To Hire A Chief
Ethics Officer?**

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Leadership

A CIO Summer Curriculum

Clearing THE AIR

How to build trust between

CEOs and CIOs **Page 34**

State Street Corp.
CIO John Fiore
(left) and
Chairman & CEO
Marshall Carter
make it a practice
to get in the same
room and talk



Toshiba's Small Door a Big Help

Opening on side makes servicing Equium® easy

BY MICHAEL CATON, PC WEEK LABS

THE SIDE DOOR ON THE EQUIUM 7000S desktop PC is one of those small features that works so well that it's a wonder no vendor thought to include one like it before.

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The Equium 7000S allows easy inside access.

plans for the 7000 series call for continuing to use the same motherboard compo-

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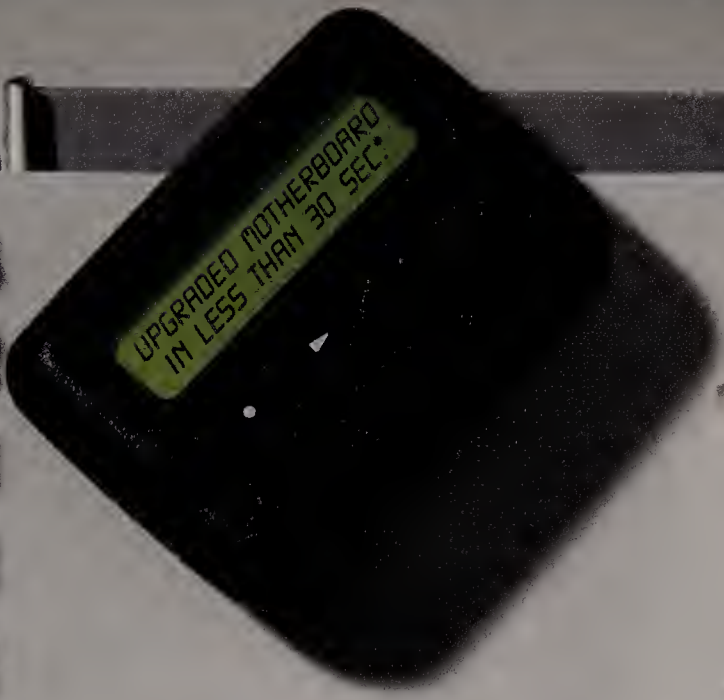
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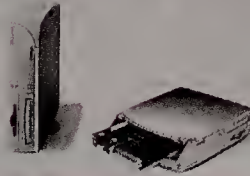
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Enterprise

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State Street's dynamic duo, John Fiore and Marshall Carter, always keeps an eye toward IS and business alignment. *Cover photo by George Simian*



INS.

Now with more network stars than anyone.

1. International Network Services This systems-integration services company has become the one that the integrators want to emulate. Its strategy of outsourcing technology-intensive processes has played well with partners and the company now boasts alliances with such heavy hitters as Cisco Systems Inc., Hewlett-Packard Co. and Microsoft Corp., among others.

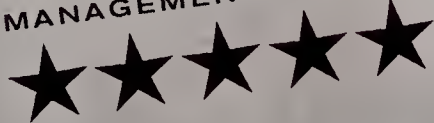
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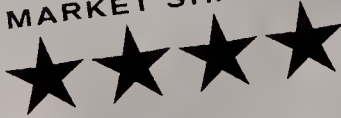
ALLIANCES



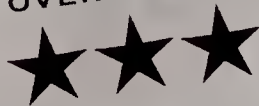
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MARKET SHARE



OVERSEAS



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—Yankee Group/Upside Magazine, FEBRUARY 1999

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Leadership

A CIO Summer Curriculum

INTRODUCTION Learn what it takes to be an enterprise leader.

CASE STUDY, PART 1 Fictional CIO David Shepard's new role as an enterprise leader comes with great rewards—and great risks.

ROUNDTABLE To take advantage of the critical role IT plays in business today, the CIO's mission needs to be more broadly defined. And so does the CIO.

SOFTWARE IMPLEMENTATION New ESM frameworks make controlling distributed computing environments as easy as connecting the dots.

EXECUTIVE COUNSEL To get ahead in your career, you might need to stay put.

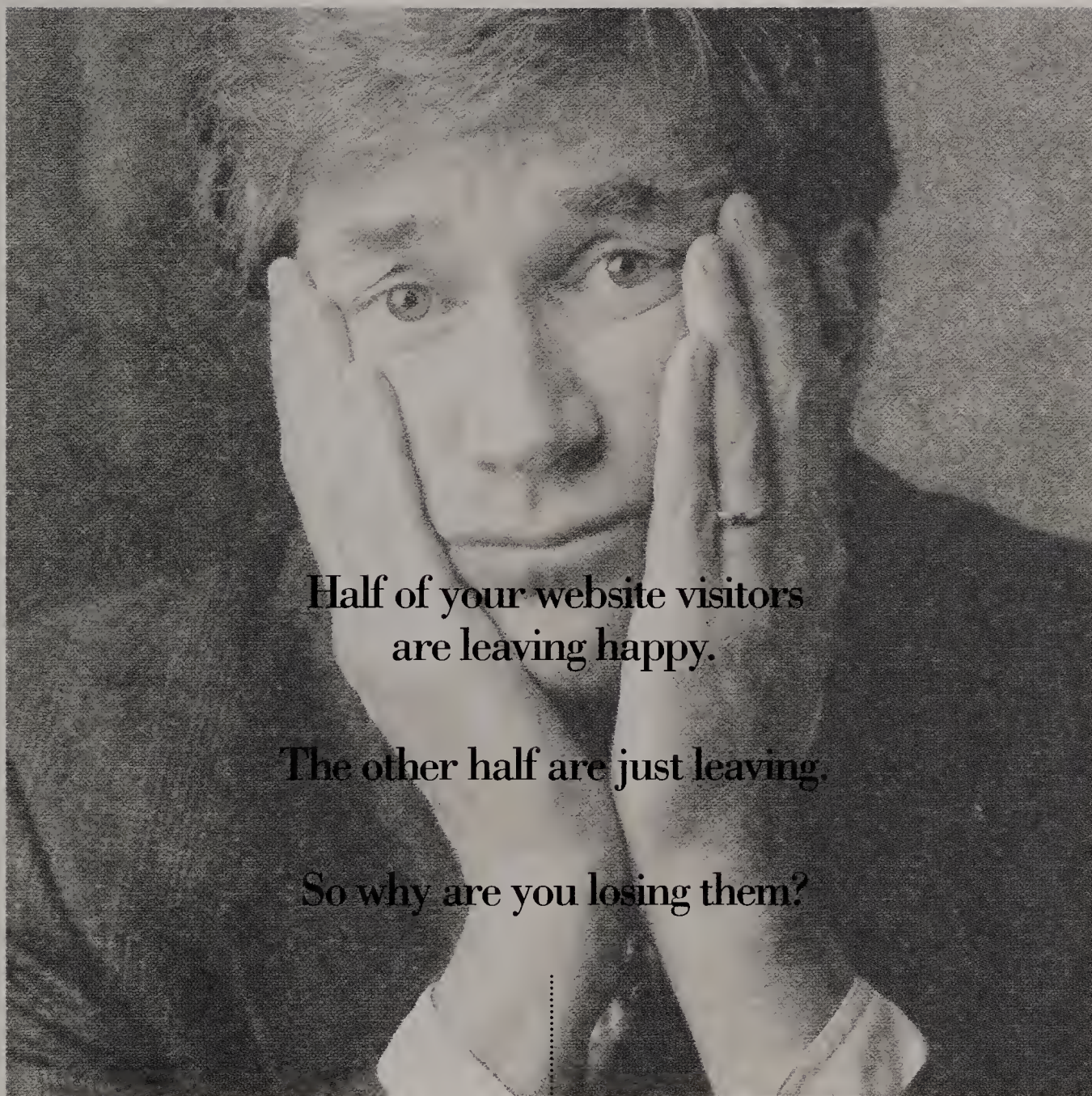
EMERGING TECHNOLOGY Automating partner relationships can shorten selling time.

SHOP TALK Russ Wells on merging IS departments.



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Re: Bungled Strategies

WHAT DOES A GIFT OF CHOCOLATE-covered macadamia nuts from a telecom company tell you about customer strategy? If you are a journalist, quite an annoying bit. Journalists who cover IT and business make up one customer segment targeted relentlessly by the costly apparatus of corporate communications and public relations organizations, which most companies today consider indispensable.

Somehow, despite all the time managers spend learning and implementing customer-focused strategies, this apparatus can backfire because it can be embarrassingly dumb and inept. Especially in the first, crucial point of contact—that initial impression through which a relationship with a customer may either flourish or perish.

Let my macadamias illustrate. A little cardboard box arrives in the mail. On its cover is a photograph of a golfer with the caption: "How to survive the next telecom earthquake." Inside, the nuts. Harmless, you might say. But I never heard from this company before, and after receiving this little token I still know nothing about what it produces or why it selected me for this honor. If a company blithely ignores my

needs while seeking my attention, appearing to spend its money aimlessly, why should I feel anything but scorn?

Could your company be inadvertently sending such negative messages to customers? Are you doing your utmost to know and respect customers, or is your marketing approach just spam? For a look at some tough lessons learned about customer information strategies, read "Seen the Light?" Page 26. Meanwhile, here's a lesson from some misguided strategies that deluge my colleagues and me: Offer us knowledge.

Nobody learns from macadamia nuts out of context. Or, worse yet, from PR reps who parrot a script because they don't know the client's business enough to engage in dialogue.

So hold off on those smart gifts—the ice cream that isn't labeled and melts before

being opened, the logo-emblazoned martini glasses or the whoopee cushion, which my editor actually received. (Where, exactly, was that company trying to position itself?) And please, tune in more closely to how your company is communicating. No doubt you'll discover much genuine service is being delivered to potential clients and media. But be prepared. Many of your customers may give you a painful and yet enlightening earful.

Gary Abramson

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**Nobody learns
from macadamia
nuts out of
context.**

CIO

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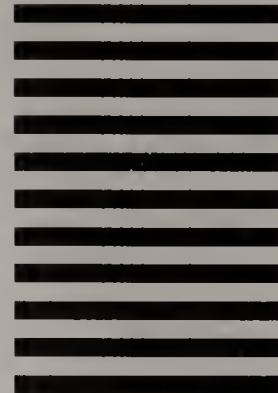
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In My Opinion

And the beat goes on....

FOLLOWING UP ON MY COLUMN in the June 1, 1999, issue (*CIO* Section 2, "More Than a Blip," Page 10), the productivity of this nation's workers surged once again in the first quarter of this year. This highlights the economy's continued progress in the ninth year of expansion amid easing fears of inflation.

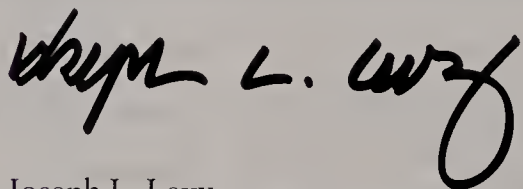
Last month, the U.S. Labor Department said that productivity—measuring workers' hourly production of goods and services—rose at an annualized rate of 4 percent during the first three months of this year. Although that was a small slowing from the 4.3 percent gain in the last quarter of 1998, the overall performance was remarkably strong, especially in view of the advanced stage of the business cycle, when productivity growth is usually more subdued.

This confirms my belief that we are truly in a new economy in the 1990s, an economy that's marked by gains in technology, low inflation and high productivity. The first-quarter advance was well above the 3 percent increase originally forecasted by economists. This illustrates the dramatic effect that technology investments have on the economy and demonstrates that, thanks in large part to IT spending, productivity has moved to a new and higher dimension.

As we all know, productivity is critical to growing standards of living. A more efficient workforce provides

organizations a competitive edge, allowing them to keep costs down and prices lower. It also allows companies to provide higher wages without affecting profits.

Once again this makes for a strong argument that all CIOs can use when trying to gain additional budget dollars to build the IT infrastructure: Those companies that don't step up their IT investments will jeopardize their very existence in the years to come. What's your opinion? As always, I appreciate your thoughts and comments.



Joseph L. Levy,
President and CEO, IDG Communications Inc.
jlevy@idg.com

PHOTO BY WEBB CHAPPELL

**Those companies
that don't step up
their IT investments
will jeopardize their
very existence.**

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Ask the Expert

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Edited by Todd Datz

Plugged in

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Comic Relief 20

Cybershopping

Peddle to the Metal

RUMOR, HYPE AND BUCK-NAKED ENTHUSIASM contribute to the impression that consumer retail electronic commerce is growing faster than mushrooms in Oregon. But when an executive board hunkers down to debate the strategic virtues of peddling their best-of-breed boodle-buggy online, it's a sure thing the board will require hard numbers. Good news: Real data is now available in the 1999 Ernst & Young LLP Internet Shopping Study, "The Digital Channel Continues to Gather Steam," a report commissioned by the National Retail Federation in Washington, D.C.

The report's statistics are plentiful and robust, and the implications sing a siren tune called profit. For instance, the demographics of the online shopper are upscale, indicating that while 71 percent of all American households have at least one member with some college education, 94 percent of online buying households have at least one. Online buyers are younger and more affluent: Only 17 percent of all households have incomes greater than \$50,000, but households above that income level represent 46 percent of online buyers. No doubt, all this feeds the swelling e-commerce figures in both dollar volume and frequency of sales. In 1998, 51 percent of online shoppers purchased something online on at least five occasions, up from 17 percent the year before.

The online learn-shop-buy cycle favors goods that are considered purchases as opposed to impulse buys. In other words, while a chocolate pretzel stand at the mall may prove to be lucrative, don't count on e-commerce to become a major sales channel unless you're hawking books, clothing, music, videos or computer equipment. However, **Fred Crawford**, national director for Ernst & Young's Retail and Consumer Products practice, cautions that any organization that gauges its success for business-to-consumer e-commerce will make a mistake if it looks only at sales figures. "The Internet won't abolish brick-and-mortar stores, but people should expect some business to move to that channel. The benefits of communication, information, entertainment and the creation of community are enormously important but harder [than sales] to quantify."

Ernst & Young surveyed 1,363 consumers to prepare the report. It's filled with oodles of interesting facts, and not only is it less fattening than chocolate pretzels, it's free. Call the E&Y Retail and Consumers Hotline at 800 488-5660 for more information on the study. *-Perry Glasser*



FREQUENCY of purchasing online

	1998	1997
Once	14%	33%
2-4 times	34%	50%
5-10 times	34%	13%
>10 times	17%	4%

MOTIVATORS of online purchasing*

Saving money/lower prices	75%
More convenience/less travel	50%
More choice/variety	48%
More fun than traditional shopping	29%

*PERCENTAGE OF ONLINE BUYERS WHO RATE IT VERY IMPORTANT

SOURCE: 1999 ERNST & YOUNG INTERNET SHOPPING STUDY

ILLUSTRATION BY CHRIS SHARP

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Dubious Statements

HOW MANY TIMES HAVE you received a letter from your health-care provider or insurer and couldn't really tell whether it was a bill for you to pay, a form for your records or an invoice that was already paid? Nearly 60 percent of respondents from an American Institutes for Research study said that when they don't understand a form, they give up trying to fill it out and stop using the product or service. That's not good for business.

So how do you keep them from wadding up your form and tossing it in the recycle bin? Don't assume your customers

always understand the business lingo contained in the form. "An invoice is designed as something that can fit the internal needs and processes of a company," says **Robert Linsky**, senior vice president of design at Art Plus Technology (APT), a graphic and information design firm in Boston. "What companies need to realize is that it's for external customers."

The forms should also strike a

balance between the important customer data and good visual design, adds **Elizabeth Gooding**, president of APT. One health-care organization, which was getting one call to its customer service center for every 30 bills it mailed, redesigned its forms and is now getting one call for every 300 bills sent. That kind of improvement will make both your customers and your customer service reps happy. ■



Career Planning

1999's 10 Coldest Executive Jobs

Estimated decrease in the number of U.S. openings from 1998 to 1999

1. VP, Retail Operations	-94%
2. VP, Government Sales	-81%
3. Oil Executive	-62%
4. President/CEO of Managed Care	-56%
5. VP, Computer Hardware Sales	-53%
6. Wall Street Real Estate Financing Groups	-49%
7. Traditional VP of Environment, Health and Safety	-41%
8. Russian Specialist Investment Banker	-38%
9. Owner, Traditional Storefront Travel Agency	-33%
10. Traditional Publishing Executive	-30%

SOURCE: CHRISTIAN & TIMBERS "1999 HOT AND NOT-SO-HOT EXECUTIVE JOBS"



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tors take a different view.
Literally.

The school, based in
Kingston, Ontario, offers
an MBA degree via video-
conferencing. Students—
mostly midcareer
Canadian executives—do
use the Internet for e-mail
and an intranet for correspondence,
downloading materials and turning in
assignments. But unlike their counter-
parts in online programs, who typi-
cally work solo and on their own
schedules, those in the Queen's
Executive MBA Program learn
together in groups in real-time.

And they learn on camera. The pro-
gram's six- to eight-student teams all
gather twice a month for classes at
one of 24 conference centers across
Canada and in Bermuda. Each team's
"boardroom" comes equipped with
high-quality, two-way videoconfer-
encing equipment, allowing the pro-
fessor and the widely scattered teams
to see and hear each other. When stu-
dents want to comment to everyone,
they "raise their hands" by tapping a
tabletop wireless device. That signals
the Kingston-based instructor to call
on Jill in Halifax, then Ray in
Vancouver. Once Jill or Ray starts
speaking, their boardroom's camera
zooms in, projecting their images to
the other teams. Meanwhile, if a team
in Toronto or Montreal wants to talk
among themselves, they just hit the
mute button.



Queen's chose in-person meetings
and videoconferencing to avoid a
common student complaint about
asynchronous Internet-based classes:
feeling isolated from professors and
classmates. For the same reason, the
Queen's program emphasizes teams
more than technology. It brings all
340 students and professors together
on campus for two weeks each fall.
Once assigned to their groups, stu-
dents can't switch. If conflicts arise,
resolving them becomes part of the
curriculum. That way, says Dean
Margot Northey, by the end of the
22-month program, they've learned
something especially valuable—how
to make a team work.

While the in-person team meetings
make the Canadian program less flex-
ible than its Internet-based counter-
parts, Queen's limits the real-time
requirements to two Fridays and two
half-Saturdays monthly. That lets the
program's executives participate with-
out affecting their full-time jobs.

Queen's, a 158-year-old university
with 17,000 students, also offers tra-
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ence and technology specialists. For
more information, visit www.schoolofbusiness.com.

—Anne Stuart

Survey Says

The Devil Made Me Do It

WORKERS REVEAL UNETHICAL
actions they've taken in
the past year. (For a look at
how some companies are dealing
with ethics issues, see "For
Goodness Sake," Page 54.)

19% Created a potentially dan-
gerous situation by using new
technology while driving

14% Wrongly blamed an error
on a technological glitch

13% Copied the company's
software for home use

13% Used office equipment to
shop on the Internet for personal
reasons

11% Made multiple copies of
software for office use

6% Accessed private computer
files without permission

6% Used new technologies
to unnecessarily intrude on
coworkers' privacy, such as
paging during dinner

5% Listened to a private cellular
phone conversation

5% Visited pornographic Web
sites using office equipment

4% Sabotaged systems/data
of former employer

4% Sabotaged systems/data
of current coworker or employer

SOURCE: "TECHNOLOGY AND ETHICS IN THE
WORKPLACE," A STUDY BY THE AMERICAN
SOCIETY OF CHARTERED LIFE UNDERWRITERS
& CHARTERED FINANCIAL CONSULTANTS AND
ETHICS OFFICER ASSOCIATION, 1998

ILLUSTRATION BY CHRIS SHARP



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Plugged In

Executive Library

As the Satellite Turns

Silicon Sky: How One Small Start-Up Went over the Top to Beat the Big Boys into Satellite Heaven

Gary Dorsey

Perseus Books, 1999, \$26

SPACE EXPLORATION HAS TRADITIONALLY BEEN LINKED TO big government and all it entails: lumbering bureaucracies, regulations and multilevel approval processes. Could a scrappy private organization break into this field and turn it on its head? In *Silicon Sky*, author **Gary Dorsey** relates the story of one small company's attempt to do just that.

Indeed, Dorsey writes that **David Thompson**, who started the Dulles, Va.-based Orbital Sciences Corp. with two friends in 1981, "coined the phrase Microspace to describe his vision of how a small entrepreneur might find ways to 'do' space in the 1990s.... Constantly improving miniaturization and performance in computer technology, he said, would eventually allow new players like Orbital, for the first time, to enter an industry largely consisting of gargantuan, government-subsidized corporations that had neither the incentive nor the interest nor the vision to change their way of doing business."

In 1982 the three had decided on a first product—an upper-stage booster rocket for large spacecraft like the space shuttle—and by 1983 had an agreement with NASA to develop the boosters. Seven years later, Orbital successfully launched its first rockets. In the wake of the Challenger explosion in 1986, in

which NASA placed a moratorium on all American space missions, Orbital sought a new product and entered the race for low-earth-orbit satellites, a project called Orbcomm that Dorsey most closely follows in *Silicon Sky*.

With Thompson's permission, Dorsey was a fly on the wall from 1992 to 1995, three critical years of Orbcomm's development.

Orbital's founders and employees believed they were totally different from the old Space Age. But that era's obsession with pushing the envelope lived on among Orbital's wide cast of characters, particularly the Wolf Pups—recent grads and fairly inexperienced engineers hired to create the rockets, satellites, software and other accessories for the maverick business. "They reveled in their work as engineering iconoclasts," writes Dorsey, "bred to disdain formal authority and bigness and slowness and costliness—for all too long the watchwords of the old Space Age." The many characters—whom Dorsey finds half-obnoxious, half-admirable—keep the narrative lively, but remembering their names, departments, projects, titles and personalities gets as confusing as a Russian novel.

The human story is both exhilarating and sort of sad. Brilliant achievements blossom, but under the crush of deadlines, financial pressures and general malaise in the aerospace industry, the once-renegade company falls prey to mainstream business concerns. Thompson's dream of maintaining the energetic, renegade culture of his small company while becoming an aerospace leader did not materialize. In 1994 Orbital announced it would purchase Fairchild Space and Defense Corp. In a chapter entitled "Old. Boring. Really Depressing," Dorsey writes, "Throughout Orbital, the purchase of Fairchild was interpreted as a show of no confidence [in its own workers]." Dorsey captures well the gestalt of a growing, struggling company, but it isn't always easy to follow the business or technical developments that transpire.

In his 1998 epilogue, Dorsey recounts Orbital's successes—both financial and technical. Orbital did beat some of the big boys into the booster-rocket and low-earth-orbit-satellite biz—but not without cost. The culture of nonconformist energy and optimism was subsumed by the stiffening infrastructure of business reality as Orbital itself became one of the big boys.

—Sandy Kendall



Comic Relief



"And ask Purchasing where my computer is.
It should have been here years ago."

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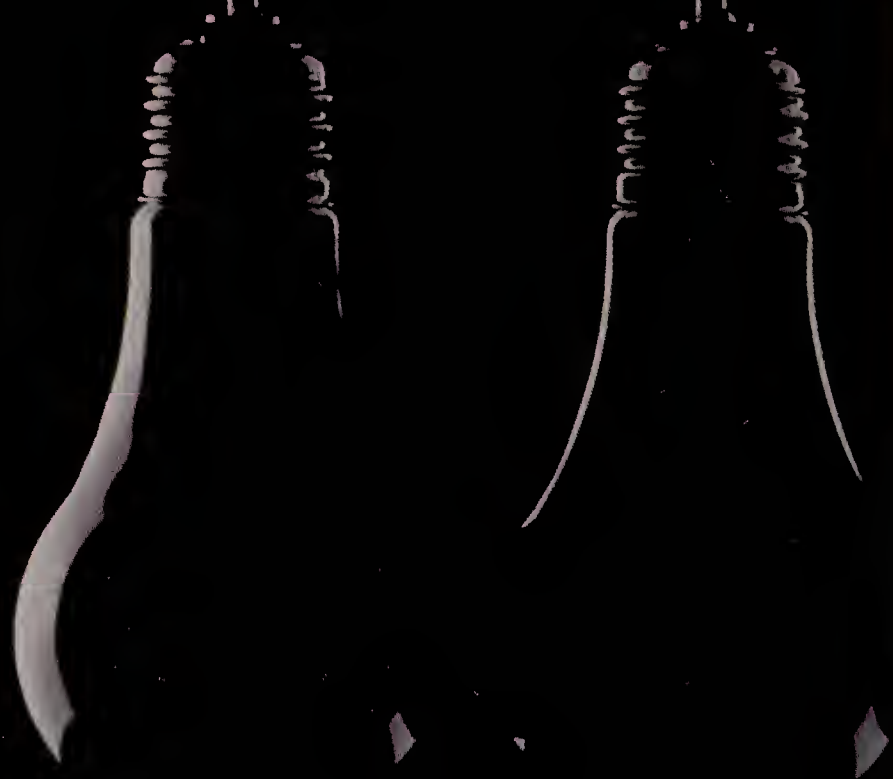
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The Price Is Right

Free-PC.com's computer giveaway is a hit, which ticks off privacy groups to no end

BY MEGAN SANTOSUS

WATCHDOG GROUPS SUCH AS THE ELECTRONIC Frontier Foundation (EFF) are in the business of sounding alarms whenever technology threatens to impinge on individual privacy. Judging from the hubbub they create, privacy advocates would have us think that all consumers are naive dupes who unwittingly invite the unscrupulous to compromise their credit ratings or steal their identities.

For their part, however, many consumers don't seem overly concerned about divulging personal details. People will compromise their privacy in return for a price—just tune into the *Jerry Springer Show*. A more wholesome example of this quid pro quo philosophy occurred this past February when a Pasadena, Calif., startup called Free-PC.com offered consumers a new desktop machine gratis in exchange for their agreeing to reveal personal information, including income, interests and spending patterns.

Hoping to find 10,000 people willing to strike the bargain, Free-PC.com was swamped by 500,000 volunteers within four days of making the offer. In return for a PC and free e-mail and Internet access, consumers accept targeted advertisements constantly displayed on their screens. Free-PC.com makes its money by charging advertisers for delivering ads to an audience that meets its profile requirements. Not content to simply post their marketing pitches, the advertisers enjoy the added privilege of keeping tabs on where consumers surf and what they buy online.

For its part, Free-PC.com doesn't reveal the names of the consumers to advertisers. Instead, users are identified by an ID number. Predictably, privacy advocates cried foul claiming that advertisers barely need to break a sweat to identify users. All they have to do is match the ID number with the billing infor-

mation a consumer hands over when they make a purchase online. While that may be true, consumers don't seem to care much. On the contrary, existing Free-PC.com consumers might divulge more information if offered additional hardware such as a free printer or a handheld computer. Soon a brand-new PC won't be good enough to snag the most desirable consumers.

For years, consumers have forked over personal data often for little, if any, remuneration. Frequent flyers part with demographic and economic data for an aisle seat and an extra bag of peanuts. People who return product warranty cards give up information and don't even get a bag of peanuts. As people wise up to the value of their own information, they'll start demanding something in return. I don't participate in telephone surveys anymore unless I get something above and beyond the feeling that someone cares what I have to say about radio stations or political candidates. On the other

hand, I religiously whip out my frequent shopper card at the supermarket. I'm more than happy to share my grocery list with the world if it means saving 35 cents on my favorite brand of yogurt.

As the value of personal information goes up, privacy advocates and direct marketers will continue to bang heads with legislators ready to add their two bits to the fray. For companies that want to

remain on good terms with their consumers, it's time to view collecting market information as a two-way process. If they want detailed data, they should think about how much it's worth—and compensate their consumers accordingly. **CIO**

Senior Editor Megan Santosus can be reached at santosus@cio.com. Send responses to this column or suggestions for future topics to reality@cio.com.





CIO

P E R S P E C T I V E S

October 3 - 6, 1999
Hyatt Grand Cypress
Orlando, Florida

Keynote Presenter

Don Tapscott

Featured Presenters

Arthur R. Miller

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Anatomy of IT Partnerships

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Anatomy of IT Partnerships

Exploring the Heart of the Enterprise

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In his latest work, **Don Tapscott**, author of *Blueprint to the Digital Economy: Creating Wealth in the Era of E-Business*, is leading two research initiatives: one on governance and the changing role of governments in the future, and what the opportunities in e-commerce really mean for business strategists and the enterprise. Tapscott analyzes the dramatic shifts occurring in partnerships among governments, business leaders and enterprises. **Arthur Miller**, highly respected Harvard Law School professor and copyright expert, offers insight into the legal

complexities of the intellectual property that executives must consider in partnership situations. **B. Joseph Pine II**, author of *The Experience Economy: Work Is Theatre & Every Business a Stage*, discusses how a new economic era is emerging. Businesses will move beyond providing a service to creating authentic, memorable events to encourage future sustainable growth and develop stronger relationships. He candidly discusses what CIOs can do to deliver ultimate experiences within their organizations. **James C. Wetherbe, PhD** joins us once again as the conference moderator and experience leader to discuss the competitive advantages of interorganizational partnerships.

As the mastermind of Connecticut's unique plan to outsource its entire IT operations to a large IT vendor, **Rock Regan** offers insight into the internal and external challenges faced

during the agreement's entire preparation process. The LAPD's CIO, **Roger Ham**, will discuss the department's critical information systems across five separate divisions to increase the department's speed, maneuverability, responsiveness, flexibility and accountability.

Joyce Wrenn of Union Pacific Railroad, **James Schmidt** of the First National Bank of Omaha, and **Robert Sweeney** of the Applied Information Management Institute explain the business/education partnership model formed by Nebraska businesses, schools and government agencies to bridge the critical IT communications and skills gaps within the state.

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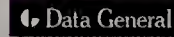
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Senior Vice President
Technology Services Division
First National Bank of Omaha



Robert Sweeney

Executive Director
Applied Information Management Institute



Joyce Wrenn

CIO and Vice President of
Information Technologies
Union Pacific Railroad Company

Keynote Presenter



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Rock Regan

CIO
State of Connecticut



Roger W. Ham

CIO
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The cover art is a vibrant, stylized illustration. It features several figures in business attire: a woman in the upper right pointing at a computer monitor, a man in the center holding a large green arrow pointing upwards, and another man in the lower left. The background is a collage of geometric shapes, including a large gear on the left and circuit-like patterns on the right. The overall color palette is dominated by blues, greens, and yellows.

CIO

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VIDEO SERVER

Seen the Light?

Companies learn the hard way that overemphasis on technology can undermine customer strategies

BY GARY ABRAMSON

Reader ROI

READ THIS ARTICLE TO learn about

- Problems companies face in developing and using customer information
- Why mistaken priorities plague many customer strategies
- How to achieve information competency

It seems a simple

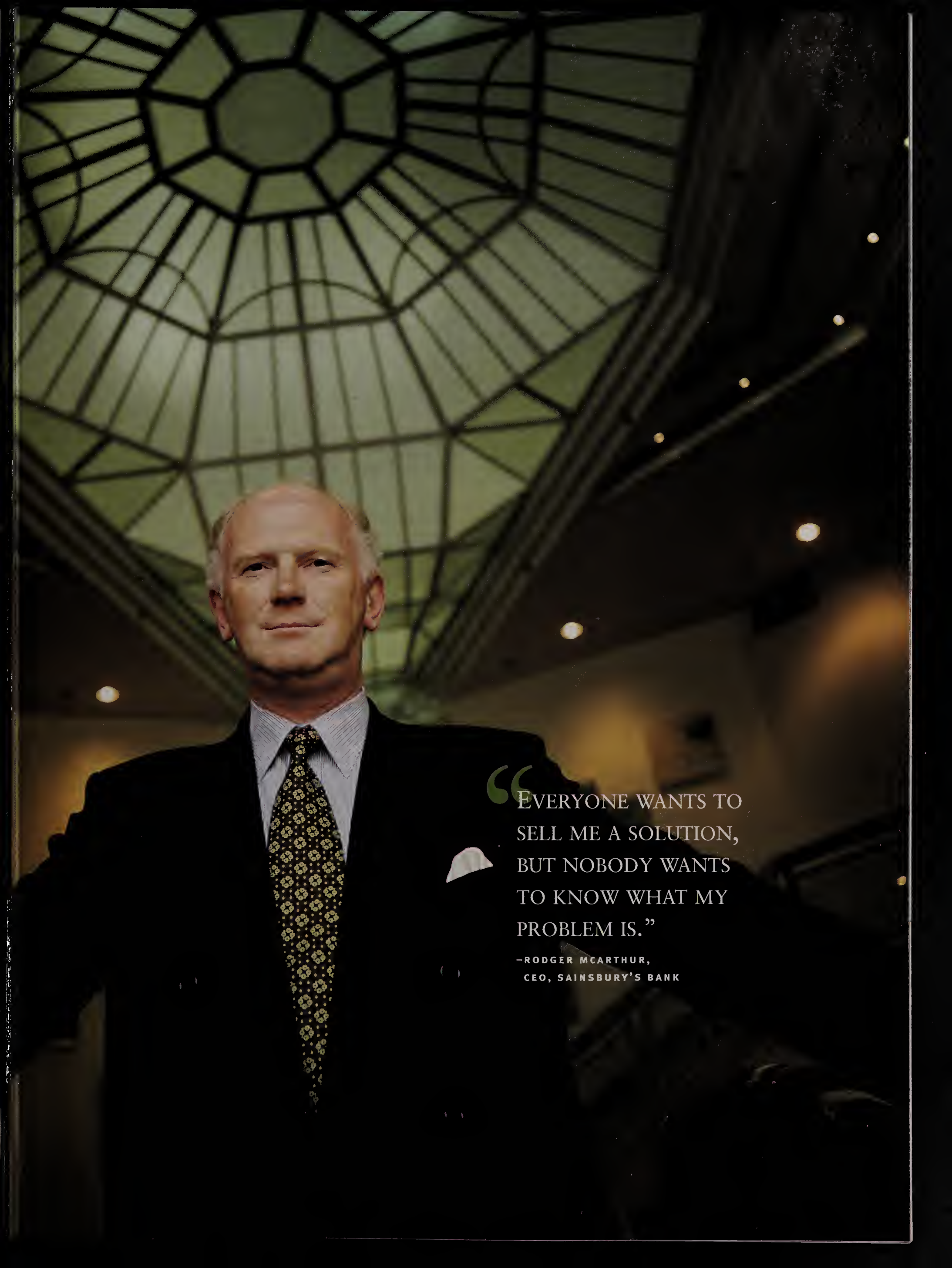
proposition: Deploy the latest technology to capture more information about customers, and then use that information to serve them in an individualized way that will earn their loyalty. One hears the wisdom of this approach touted at conferences, in hallways and on ads during televised sporting events. What could be more straightforward? Unfortunately, the vast majority of companies taking up this proposition are investing heav-

ily in the IT portion of the equation but are skirting or struggling with the other critical factors that enable a company to carry out a successful customer strategy. While it is easy enough to buy IT, it is devilishly tough changing a business's structure, culture, processes and information habits, not to mention finding leaders who dare to champion such changes. The upshot? A corporation can be IT rich but still informationally inept.

So argues customer relation-

ship specialist John McKean, who has devoted several years to this problem. His book, *Information Masters: Secrets of the Customer Race* (Wiley & Sons, 1999), takes a holistic and sharply critical view of common customer strategies. It should become a beacon to any marketer, sales chief, product developer or information executive navigating in the thick fog of customer data and unsure of where they are headed.

For his book, McKean inter-

A man with short, light-colored hair, wearing a dark suit, a light blue shirt, and a patterned tie, stands in the center of the frame. He is looking directly at the camera with a slight smile. Above him is a large, intricate glass dome with a geometric pattern of triangles and hexagons. The background is dark and out of focus, showing some warm, glowing lights.

“EVERYONE WANTS TO
SELL ME A SOLUTION,
BUT NOBODY WANTS
TO KNOW WHAT MY
PROBLEM IS.”

—RODGER MCARTHUR,
CEO, SAINSBURY'S BANK

viewed executives at dozens of companies in the United States and Britain about their challenges and sometimes failures in executing customer strategies. Although his sources requested anonymity in *Information Masters*, a handful of them agreed to go on record with *CIO* to discuss their attempts to develop what McKean calls information competency (see "Mistaken Priorities" at right).

Banking on Groceries

SAINSBURY'S SUPERMARKETS, A British chain with 10 million customers using "loyalty cards" that track purchases, had a novel idea two years ago: If we are constantly accumulating information about our customers' grocery shopping habits, management figured, then couldn't we make some assumptions about their banking needs as well? Why not offer veterinary health insurance to that man bringing home the dog food? A mortgage pitch for that woman with a shopping cart full of diapers? These are examples of a new cross-marketing strategy being led by Rodger McArthur, CEO of the two-and-a-half-year-old Sainsbury's Bank in London, which as of March 1999 had 1 million customers.

As McArthur paints it, the bank is something of a virtual organization: just 45 full-time employees and a call center and back office in Edinburgh, Scotland, staffed by 500 employees at the Bank of Scotland, the joint venture partner with the supermarket chain. The Bank of Scotland also handles all of Sainsbury's processing. There aren't any branches and nothing more than a few brochures at the checkout counter. Just a phone number, call center and the watchful, data-scanning eyes of a team of Sainsbury's analysts who work directly for McArthur, looking for new marketing opportunities.

But there is a problem with the virtual bank. "The way I look at it, when I started in banking 30 years ago, we did understand our customers. And then came along horrible things called computers, and the computer kept all the information," McArthur says, with only the tip of his tongue in cheek. "When I was posting entries in a bank, I knew my customers and whether they paid their

fuel bills or were posting checks to the local casino." Nowadays, bank executives have had enough of averages and aggregates that computerized back offices have produced and instead need to track the individual customer.

To resolve this problem of computers rather than humans managing customer information, most companies try to find increasingly sophisticated IT remedies. But McArthur sees plenty of opportunity to go down the wrong IT path with his new venture. Last year Sainsbury's Bank began working on data warehousing with the Bank of Scotland. "We face the danger of being offered sexy technology, and my dour job is to say, 'Never mind the gray box, what's available in the culture of the company and its way of dealing with customers that will help us to progress?'" McArthur cautions. "I'm very keen on the full development of data warehousing, but it will not be the panacea for all our problems. It will take an awful lot of iterations of knowing the customer before we get it right." And of knowing

how much data is necessary to capture and not overdoing it. In recent years, he says, "I've been inundated with the tech solution providers: Everyone wants to sell me a solution, but nobody wants to know what my problem is."

Equally as important as the IT, he has found, are customer focus groups and Sainsbury's team of analysts. "A great evening out is to go to [a focus group], sit behind a one-way mirror and listen," McArthur says. The bank's customers typically say: "I trust the brand, I'm prepared to try your banking products, but don't take me for granted. And last but not least, how do you provide a service to my children?"

"I've got to be honest," McArthur confides, "I don't have the solution for that yet." His analysts may resolve that and other puzzles before long, however. McArthur describes them as people who can see patterns and get ideas from information that computers cannot.

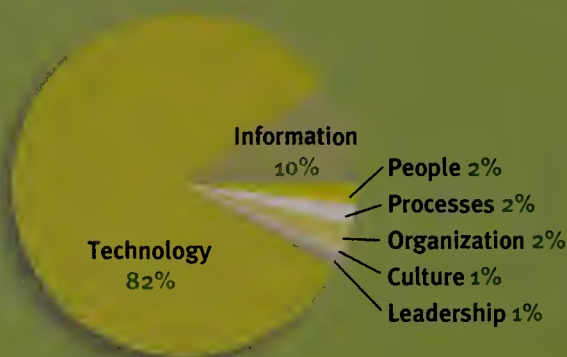
McArthur modestly places his bank at the beginning of the road to information mastery but with the right approach

Mistaken Priorities

Why companies fail to build information competency

JOHAN MCKEAN, CUSTOMER RELATIONSHIP SPECIALIST AND AUTHOR OF *Information Masters: Secrets of the Customer Race* (Wiley & Sons, 1999), describes information competency as a company's ability to use information about customers well. He identifies seven components of this ability: people, processes, organization, culture, leadership, information and technology. In a measurement of how companies invest in those components as part of their customer strategy, he notes discrepancies in what they do and what they should do to build an optimum, overall information competency.

HOW COMPANIES INVEST IN CUSTOMER STRATEGY



HOW COMPANIES SHOULD INVEST IN CUSTOMER STRATEGY



SOURCE: INFORMATION MASTERS: SECRETS OF THE CUSTOMER RACE (WILEY & SONS, 1999)

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“THE EXPERIENCE OF PEOPLE OWNING SEGMENTS—SELLING, FORECASTING AND HITTING TARGETS OF THESE CUSTOMERS—WAS A CHALLENGE.

WE HAD NO PARADIGM FOR THAT.”

—JOHN PETERSON, DATABASE MARKETING VICE PRESIDENT, AT&T CORP.



to technology—rolling out only what customers are comfortable with. For the moment, that is telephone banking. In Britain, Sainsbury's practices of telephone banking will probably lead at some point to Internet banking, and TV set-top boxes may be the next phase since many consumers don't own a PC. But there's no rush. "Where I have criticism of bleeding-edge technologists is their saying that by the year 2000, the whole world will be full of the Internet. Let's not be driven entirely by technology; it's a matter of understanding what your customers need."

Segment and Conquer

IT WOULD BE EASY TO think that a telecom giant that has been in business for ages would have a pretty good grasp of its customers. But deregulation changed AT&T Corp.'s market, and the company has found itself competing in a crowded and new landscape, and sometimes in businesses it had not imagined. "We were a Baldrige-award-winning company, and everything had to be world-class. But some of the marketing people would describe [the company] as third-class in getting mailing lists out the door," says John Peterson, database marketing vice president in Basking Ridge, N.J. "Analytics of any type was a painful task." That was about four years ago, one year into a partnership between IS and marketing to reverse that embarrassing discrepancy.

"When we started on this journey, we were just a long-distance company and we thought we were getting close to the top of the mountain in targeting segments, in treating customers better," Peterson explains. "Then all of a sudden we're in the local phone business, the wireless business, the Internet business, and it turns out we're just in the foothills [of information competency]."

AT&T has decided it must transform itself from a product-driven to a cus-

tomers-segment-driven organization at the same time as the company is broadening its range of products, Peterson says. Long-distance users, for example, are now grouped as direct dial, phone card, collect and international users. "We had to define the rules for belonging to a customer segment and the rules for what we do when a customer changes [telecom companies] or buys another service [from AT&T]." But harder still was reassigning responsibility for the new customer segments.

Here was a classic case of having sophisticated IT systems that were designed for an old set of questions. A marketing manager is now in charge of one customer segment, for example, college students, and must make revenue projections for the CFO. But all past cus-

tomers data was organized by product, so marketing to the new customer segments was like starting from scratch. "The experience of people owning segments—selling, forecasting and hitting targets of these customers—was a challenge. We had no paradigm for that," Peterson says.

The company needed to rework financial reporting systems, a critical technological and cultural change, since people still believed they were paid and rewarded on the income statement of their product lines instead of the new customer segments, Peterson explains. The existing systems had some ability to analyze customer data geographically, "but the customer segment [data] was something totally unknown."

The changes necessary are hardly limited to IT, however. Under AT&T's old product-driven strategy, each product manager could mail his or her customers, and some customers might get hundreds of mailings a year. "It wasn't our intent, but it was the luck of the draw," Peterson says. But the problem has been fixed. "As we've moved to segment strategy, the manager who controls the segment controls who gets to 'touch' that customer. We're constantly reminding people that nobody can go to market unless the segment manager approves." In other words, the in-state toll-call marketers can't mail the college students without that segment manager's approval. It wasn't an obvious procedure to follow in the beginning of the shift from product to segment, Peterson acknowledges.

A recent advance in the segment strategy has been to let the heads of each market segment determine how their customers will be handled by customer service. Some customers may always be sent to a live phone rep, international callers might be sent to reps who specialize in their geographic areas, and customers who prefer to be addressed in a language other than English will be rec-

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MARKETING AND I.T.

ognized by the system and routed to someone who speaks that language.

But Peterson says that many information challenges remain before AT&T fully masters the customer information challenge. One of the current issues he's struggling with: Who owns a customer's profile when that customer moves across the United States? "You move from Chicago and appear in New York as a new customer. How do we recognize you, and who in the organization [is responsible for handling your account and segment change]? Our answer right now is nobody," Peterson says. "We know who owns the system that tries to match addresses, but it doesn't work too well." For a company that has 75 million customers in a country where each year one out of five people change homes, that's a problem.

Cultural Adaptations

WHAT HAPPENS WHEN BETTER use of information reveals something about your customer that challenges the way you do business? That question is one that the British upscale supermarket chain Safeway Stores PLC (no relation to the U.S. company of the same name) has faced recently. When the company began issuing customers its new loyalty card, it discovered from the resulting sales data that it had been paying too little attention to what its most valuable customers bought. That's because of the food retailers' traditional reliance on averages, says Michael Winch, IT director. Safeway forgot that its most valuable customers are not average. Take, for example, a feta cheese that ranked 295th in sales out of some 300 cheese products the chain sold in the United Kingdom. It naturally was placed in the least accessible spot in the cheese section. But this cheese, it turned out, was one of the preferred products of Safeway's top 25 percent of customers, that is, its regular, highest-spending customers. "They didn't buy a lot of it, but they would have gone somewhere else [to find it]," Winch says.

"The trick is to maintain the loyalty of the top 20 percent and motivate the secondary and tertiary to become prime customers," he adds. Safeway is now doing this by combining IT, such as data

warehousing and data mining, with targeted communications. Plus a dose of common sense. Two stores, one in London and another in rural Scotland, had similar revenues, but the customers in London appeared to be spending less on average. Marketing people wanted to offer a discount to London customers to get them into the store to buy more. But it turned out the Scots were buying more because they lived far from the market and came in every two weeks, while the Londoners came in frequently but often picked up just milk and bread. "If you had given a discount you'd be throwing away money. We had a diametrically opposed problem to what we thought it was," Winch says.

But such IT-enabled insights don't always sit well with traditionally trained marketers. "For a start, [the business clients of IT] saw they were being challenged, criticized. First they wanted to use the information to show that the position they had taken was correct," Winch recalls. "We could have moved a lot quicker if people could change fast.

But you need time to change people's mind-set." And in the end, a few senior managers chose to leave rather than adopt the new strategy.

In fact, Winch was among the lucky ones. One of the painful lessons from his research into customer strategy, McKean says, is that sometimes the best, most visionary strategists lose. "Some firms have a customer culture and have to tweak the balance of their investments less. Some have a leadership team from the dinosaur era," he says. "Many visionaries ran out of steam, it was too much, they were only human." Companies that have succeeded in the struggle are the "ones where the change agent got the buy-in. Others do too much change for the corporation to handle." His advice: Information executives and others responsible for customer strategies should learn the lessons of information competency and then pick their battles—very carefully. **CIO**

Senior Writer Gary Abramson can be reached at gabramson@cio.com.

“YOU NEED
TIME TO
CHANGE
PEOPLE’S
MIND-SET.”

—MICHAEL WINCH, I.T.
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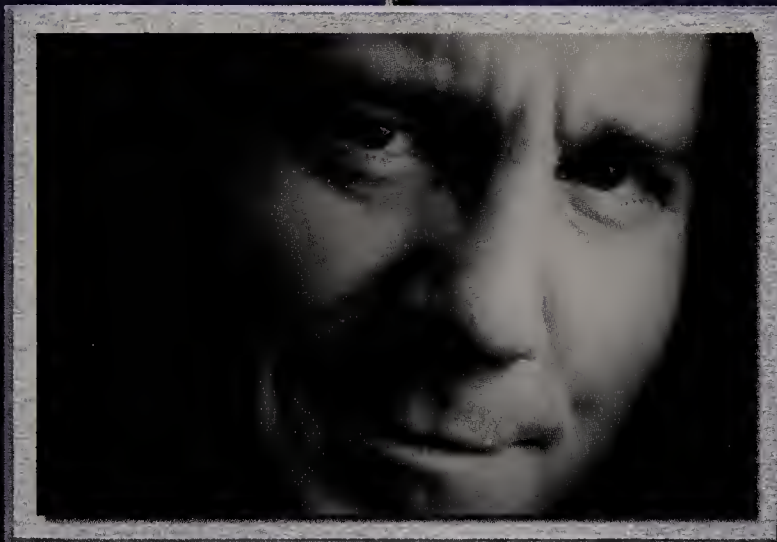
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*Information executives are anxious
to hear their CEOs say,*

In CIOs We Trust”

BY PERRY GLASSER

AFTER MEETING WITH HER COLLEAGUES FROM THREE other divisions, the information executive returns to her desk where three status reports from regional IS managers await her review. The reports contain the data she'll need to present at the quarterly operations meeting next week. But she's unable to focus on the task at hand. Like a swarm of buzzing gnats, unresolved questions about IS's relationship with the business side—issues of trust, leadership, authority and responsibility—have followed her from the meeting. Why isn't it clearly communicated exactly what issues IS owns and what issues belong to her business-side colleagues? They collaborate with goodwill, and she is sure they share the same corporate vision. So why is she so uneasy?

Sound familiar?

Two real-life executives recently shared with CIO *Enterprise* an e-mail exchange between them. We were impressed with the frankness with which professionals communicate, and we were struck by the goodwill that can exist in the executive suites of business leaders.

Reader ROI

This feature is part of CIO's Summer Leadership Curriculum, which begins on Page 34 of Section 1.

READ ON TO LEARN HOW

- Executives maintain mutual trust
- IS and business executives can improve relationships
- Effective leadership and organization create open lines of communication



However, the e-mails also illustrated the tension inherent in the business-IS relationship. We all know the scenario: The business units want a product or a capability as soon as possible, but IS wants to be sure of standards, wants to test and wants a slow, methodical rollout. Feeling pressure to move products to market, the business side dismisses IS's words of caution and surges ahead. The CIO feels irrelevant, as though the message of caution has been shouted into a deep, empty well.

But while the two executives who generously shared their e-mail memos with us are in the hospitality industry, we wondered to what extent the issues, including questions of trust, responsibility and leadership, that generated this exchange are common in all organizations. How do business executives and their IS counterparts resolve differences? Must the two sides always grapple over issues of timing and alignment? What personal and professional measures can executives take to build bridges of understanding?

We showed this exchange to two pairs of executives—State Street Corp. Chairman and CEO Marshall N. Carter and Executive Vice President and CIO John A. Fiore, and Dime Bancorp Inc. Chairman, President and CEO Lawrence J. Toal and CIO Thomas J. Ducca—and asked for their comments. We also showed it to Warren Bennis, an expert in the field of leadership.

We asked them how they handle personal communication logjams in their own organizations, what advice they'd give the two executives and how they think executives everywhere can better handle those nagging human issues on which so many matters of business may rest—or run aground.

Here's the exchange:

From: A Frustrated IT Executive
To: The President

The situation always begins with a simple IT project request from marketing or operations. Should the business define the new IT project and specifications and then bring its plan to IS? Or should IS take the lead in analyzing the problem and developing a solution?

The business-side people always know the components of their problem, but due to past experience, they may resent working with the IS department. IS people have the reputation of taking a long time and being difficult to work with because they want to design a solution that is fully integrated into the current environment of existing systems. What's more, they want to get a handle on ALL dimensions of the

problem before they start writing code.

Meanwhile, the business is on deadline and needs a quick fix.

More complicating still is that most business problems involve MULTIPLE business units. So when IS asks the business to define the problem and to issue a comprehensive request for services, no single business unit views the problem as its own. As more business units are affected and consulted in pursuit of an integrated solution, nothing happens. Frustrations soar. What started as a simple project now looks far too complicated.

Whose job is it to get all the affected business units to the table?

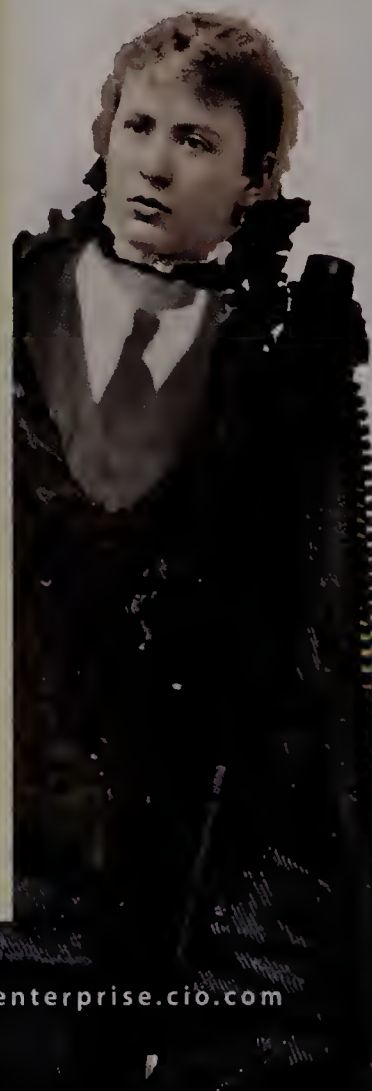
Sometimes the original business unit takes matters into its own hands and outsources a quick and dirty solution to solve its specific problem. When the project is done, it's turned over to IS to integrate backward into the environment, which may or may not be possible. Even if it is possible, this behavior creates huge friction, rework and waste within the organization.

Is the CIO or another top information executive the person who needs to be the one pulling all the business units to the table to solve these multiunit problems? Or should the business create an IT council to make these decisions? My experience is that IT councils can vote—but they cannot lead.

Leadership comes from people, not from organizations. To place responsibility for fixing cross-unit business problems on the CIO might redefine the role of the CIO as being more of a Chief Business Process Optimizer (CBPO), responsible for optimizing business processes and information flow between business units. Should the business give the CIO (and his or her staff) the authority to determine optimal business processes and information management processes? Or is IS a business-enabling department that should be business-neutral?

I believe the ultimate and optimal solution is for the CIO role to change to be more of a CBPO who is charged with initiating and facilitating cross-unit coordination. But it is also my belief that this is a space that is neither articulated, acknowledged nor sanctioned by businesses today. Business units simply want their projects to be accomplished. They do not want outside help with their business decisions, and CIOs

Should the business give the CIO the authority to determine optimal business processes?



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may be uncomfortable or poorly equipped to play this facilitator role. For myself, I am learning my way into this emerging role, but it is a painful process without crisp edges nor clear scope or responsibility. It is a role that is misunderstood by some and not welcomed by others.

Thank you,
Vice President, Knowledge Technologies

From: The President
To: A Frustrated IT Executive

It is not crisp and clear as to where the marketing and business people have responsibilities and where the IS people have responsibilities. In between, there is a great gray area in which invention and process development fall.

I think that the IS folk cannot be effective

without the intense and intimate involvement of operations or marketing. I also think that operations and marketing people who don't have the intense and intimate involvement of IS pros cannot hope to come up with or even envision the possibilities of IT processes and applications that cut edges. We create and invent together, which means that the lines of responsibility cannot and should not be too crisp and clear.

I agree with your concern about needing a better way to work together, but how we get this done is not by adding staff or even by assigning one person to handle liaison duties. All of us have to realize that we invent and develop what our business does together. Brands can't design something and then throw a book full of needs over the fence to IS. And IS can't expect a fully cooked summary of what is needed in a particular program, either. It is an integrated process.

Your opinion is always valued. From my personal point of view, you have been and continue to be a valuable resource to our company. I want as much of your time and attention as I can get because I know that you are smart, thoughtful and experienced, and I know that you care.

Thank you for all of your contributions and for being a friend.

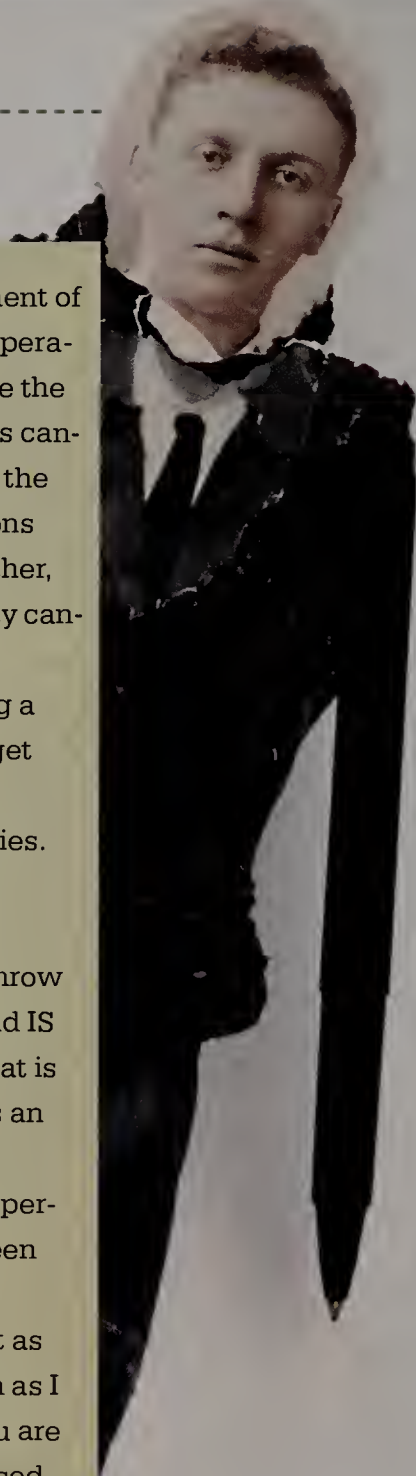
The President

On the next three pages, the executives from State Street and Dime Bancorp comment on the e-mail exchange.

A State of Trust

"GET IN THE SAME ROOM AND TALK!" advises Marshall N. Carter, chairman and CEO of State Street Corp., the Boston-based international financial transaction giant. Executive vice president and CIO John A. Fiore could not agree more. He says that for CIOs to have their advice heeded, "They have to go out and familiarize themselves with the business, constantly asking other executives in plain English, 'What do you want us to do for you?'" Carter and

State Street CEO Marshall Carter (left) and CIO John Fiore encourage cross-unit interaction between the IS and business sides.



THE

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Fiore evolved 10 principles for systems-IS management that everyone involved with IT in the company observes (see "Common-Sense Principles," on the Web at www.cio.com/printlinks).

State Street tracks millions of transactions in dozens of currencies and performs asset evaluation for mutual funds, banks and insurance companies around the world. Of the company's 18,000 employees, 2,800 are IS workers and more than a third (6,500) are employees who are involved with technology in their jobs. Carter, who has led the company since 1991, does what he must from the command level to ensure smooth operations. "I want my top executives free to do their most essential work," he says. "I can't allow John to get bogged down in daily administration. The fight to keep administrative processes down so that executives can support the customer is eternal."

Carter and Fiore agree with the vice president of knowledge technologies at the hospitality company that leadership comes from people, but they also stress that a clearly defined internal organization is required for the kinds of open communication that breeds trust. The president of the hospitality company may believe that the lines of responsibility cannot and should not be too crisp and clear, but at State Street, Carter and Fiore strive for an upfront understanding of who's in charge of what. The executive duo recently put in place a matrix organizational chart. CIOs of State Street's strategic business units not only have solid line-relationships with business-unit directors but with Fiore as well. Carter and Fiore believe that this structure sets loose the creative energy of collaboration from cross-unit interaction, but the lines of responsibility are never ambiguous. "You can't let people just infer what their responsibilities will be," Fiore says.

The Dime Banks on Leadership

"EXECUTIVES WHO ARE LEADERS RELISH accountability," says Lawrence J. Toal, chairman, president and CEO of Dime Bancorp Inc. Toal has been accountable to stakeholders of the Dime since January 1997. A regional thrift with 89 branches in the New York City area, the Dime also owns North American Mortgage Co., the sixth-largest mortgage originator in the country. CIO Thomas J. Ducca is now spearheading convergence projects for networks and telecommunications that will unite all 280 offices across 45 states.

At the Dime, leadership and trust come from what Toal and Ducca refer to as a governance infrastructure. They'd advise the executives at the hospitality company to have not only a solid organi-



zational chart to delineate responsibility and authority but to build trust based on strategic considerations. In other words, avoid frustrating the IS executive when "the business is on deadline and needs a quick fix."

Senior management at the Dime recently began operating under a three-year strategic plan. That plan will be reviewed annually in order to avoid surprises and last-minute project crunches. Executive steering committees direct multidisciplinary project teams so that business units and IS have early buy-in and share the same goals. At the Dime, IS credibility is therefore maintained because "IS works with end users to fulfill business needs," says Ducca, "and IS functions as a support."

But rapidly changing market conditions, such as two competitors merging, can disrupt the best strategic planning. The Dime can, well, turn on a dime if it must. One-year and three-year plans must be set aside when windows of opportunity open and require immediate action. Take for example the recent merger announcement from regional competitors BankBoston Corp. and Fleet Financial Group. To capture new efficiencies, they will likely divest themselves of several formerly competing branches that once served the same geographic

CIO Thomas Ducca (left) and CEO Lawrence Toal of Dime Bancorp believe a governance infrastructure helps people build trust.

PHOTO BY JOHN RAE

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area. The government will also force them to sell off some branches. The Dime will need fast answers: Should it attempt to acquire some of the discarded branches? Can the branch IT systems be merged with Dime's systems? Do the resources exist to implement that quick acquisition? Ducca says the most important element for creating the necessary

"People have to believe they will not be second-guessed."

—THOMAS DUCCA,
CIO OF DIME BANCORP

collaborative atmosphere for flexibility is "empowerment all down the line." The executives who make the calls, whether they be economic, staffing or technical, must believe their expertise and judgment will be trusted.

But empowerment down the line does not mean freedom from responsibility. When Toal, Ducca's boss, says, "Tom is on the hook once the business case is made to reach out and translate that case into technology choices," Ducca laughs. He does not mind being on the hook—he's an executive who enjoys his responsibilities. Considering the plight of the information executive who sent the e-mail memo to his CEO, Ducca adds sympathetically, "People simply have to believe they will not be second-guessed."

Toal supports that. He believes that taking risks with people by not looking over their shoulders and allowing them to accept responsibility for their decisions is the essence of every CEO's job. "All of us [CEOs] have to realize that we invent and develop what our business does together," he says. Toal adds that top executives should "educate people to team efforts, not make proclamations." Toal and Ducca advise that the president of the hospitality company empower his vice president of knowledge technologies to create a governance system that creates guidelines for decisions and is linked to strategic planning. Since strategy is rearticulated annually, there's no ambiguity as to what the strategic drivers are for IT decisions. In that way, IS supports the business and never wonders if it

Warren Bennis's Commentary

"We Create and Invent Together"

THE I.T. EXECUTIVE WRITING THIS E-MAIL IS ON THE RIGHT track when she proposes redefining her role as facilitator of cross-functional efforts. I see the CIO as a co-leader and case manager, someone who can coordinate, integrate and then deploy the intelligence in the organization to solve problems or seize opportunities. It's like the Hollywood movie model, in which a group of people with diverse disciplines come together temporarily to make a picture. The role of any leader is no longer to focus purely on the production of goods and services; instead, it is drawing individuals together to create a wealth-producing community. The CIO's concept of a chief business-process optimizer seems to get at that role, but that particular terminology isn't very inspiring (language is important in leadership).

The CIO is searching for clarification and delineation of her responsibilities. She wonders whether the business unit or the IT function should take the lead in analyzing the problem and developing a solution. The answer is both. As the president says in his response, "IT folk cannot be effective without the intense and intimate involvement of operations or marketing.... We create and invent together." His point is perceptive, and his words ought to serve as a manifesto for all CIOs.

Getting in the same room and talking, as the State Street Corp. executives suggest, isn't bad advice. But the only way to bring about real integration of any part of the organization is by doing work together. For example, Monsanto Co. in St. Louis pairs technical people such as physiologists with line-of-business people such as marketers. At the *Los Angeles Times*, each section of the paper is now an autonomous department made up of editorial and business people. By working together this way, the two groups in each company learn a lot from each other, and the products reflect that.

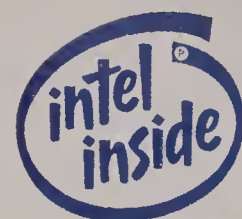
As I observed in the roundtable and case study features in Section 1, there is a prevailing mind-set among CIOs that they are marginalized. The CIO in this e-mail exchange implies the same when she notes that the business heads don't welcome outside help in their business decisions. I was happy to see that the president refuted this in his response. He tells the CIO that he wants as much of her time as he can get. I hope she takes this as an invitation, because that's what it is. He's effectively telling her it's OK to come into his office anytime.

—Warren Bennis



must take the lead in analyzing a problem and developing a solution. **CIO**

Senior Writer Perry Glasser can be reached at glasser@cio.com.



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Taking An Option On IT

Real options theory evaluates technology investments by linking them to the financial market



It's no secret that many companies struggle with decisions about technology investments. Executives know that technology is important, but many have difficulty aligning IT spending with business goals. This is particularly true in today's business economy, where markets and companies are being forced to adjust and change at an almost blinding pace. It's hard for anyone to make an informed decision when many variables are in flux and even harder when there's a dearth of decision-support tools.

Unfortunately, ROI and other traditional valuation approaches fall short when IT plays a strategic role in uncertain markets. Think of it this way: Can you predict the next killer app that will emerge from your e-commerce initiative? Of course not, because at this point there are a multitude of possible outcomes. But a traditional ROI analysis requires such a pinpoint forecast—a single future scenario and investment plan. When executives face the prospect of giving a thumbs-up to a big-ticket technology project with such analytical support, it's not surprising that many fall back on gut instinct for guidance.

Traditional tools fail because they neglect to account for the value of flexibility—how managers respond to unfolding events in uncertain markets. But an emerging valuation approach called real options creates a portfolio of options for IT

Reader ROI

READERS WILL LEARN

- ▶ How to use options thinking to measure the value of IT projects
- ▶ Why real options build flexibility into technology investments
- ▶ The importance of linking technology decisions to market conditions

**BY MARTHA AMRAM,
NALIN KULATILAKA AND
JOHN C. HENDERSON**



investments by linking these seeming internal decisions to external financial markets. The real options approach gives executives a set of choices that can be made in the future in response to changing business conditions.

IT decisions are difficult and inherently complex, and the real options approach does not make decisions easier. But this approach does provide a framework for the CIO and line executives to engage in meaningful strategic dialogue, offering the senior executive team a mechanism to manage this business risk over time.

Real Options Defined

The real options approach originates from the research done to price financial option contracts. For example, a call option contract on Lucent Technologies Inc. gives the holder the right, but not the obligation, to buy a fixed number of shares of Lucent stock at a specified future date for a specified price. Real options are opportunities that center on real (nonfinancial) assets. Real and financial options are valuable because they enable the option holder to take advantage of potential benefits while controlling risk. In essence, options shift the possible distribution of future outcomes toward a more favorable pattern. Buy an option today and make a follow-up investment if the option proves worthwhile. If things don't go well, there is no need for further investment, and the loss is limited to the cost of the initial option.

How do real options work in the business world? Let's take a very simple case of expanding the manufacturing capabilities of an ice cream plant. Suppose that with a bit more manufacturing capacity, a line for seasonal flavors can be added. It's not clear that flavors will be produced in every season or which flavors will be most successful. But installing new production capacity creates the option to learn about the value of seasonal flavors. The upside to this product flexibility option could be large as it creates new markets. The costs of the option are limited to the cost of the extra capacity. The flexibility

option allows the company to adapt manufacturing to respond to changing customer demand.

Options thinking highlights two key points. First, risk can be your friend. Greater market volatility does not translate into greater losses, because losses are limited to the initial investment. But greater volatility does produce greater gains because the option enables you to capture sudden market upswings. With greater volatility, you should be willing to pay more to acquire an option—with all else being equal.

Second, time is on your side. Options thinking shows the value of longer decision horizons. Two-year options allow you to change your mind several times and are more valuable than options that are only three months long.

The real options approach creates a decision-making discipline that emphasizes learning and choice. For IT managers, the challenge is to transform this intuitive concept into a workable methodology.

What's the Attraction?

Real options capture the value created by IT investments that deliver platforms of business flexibility in a disciplined manner. For example, let's look at an IT investment to support the ice cream company's growth. Suppose there is already enough computing capacity to grow the business another 25 percent. Investing in more computing capacity doesn't have many benefits. But a more valuable IT investment would allow the company to retain business flexibility, such as options to change the current product or to launch new products.

For IT, those options would translate into building systems that are easily modified or extended in response to the company's product changes. For example, a proposed data warehouse might allow rapid application development, which enables the quick addition of new product data to the warehouse. Or the warehouse might feature customized decision support, which would help analysts choose new flavors faster. Such a data warehouse contributes to the prod-

uct flexibility option and is thus viewed as a worthwhile IT investment. If executives relied on traditional valuation tools that focused on incremental cost reductions or incremental increases in

By Definition

The real options approach is a method of evaluating and managing strategic investments in an uncertain business environment. Based on academic research by economists Fischer Black, Myron S. Scholes and Robert Merton, the options theory is now widely used on Wall Street. The real options approach extends option pricing tools from financial contracts to real (nonfinancial) assets.

capacity, the benefits of the data warehouse would be less obvious.

Why go to the trouble of adopting a real options approach to IT investments? We think there are four key reasons.

- **A disciplined process for decision making.** A key aspect of the real options approach is discipline. Because options tools were first developed for financial instruments, they carry a market orientation. This means that when executives use options strategy to evaluate IT investments, the model analyzes valuation problems by how financial markets think about business opportunities. It uses market-based data instead of subjective guesses wherever possible. Since IT investments will increasingly define a company's future business platform, real options gives senior executives a much-needed valuation tool that works in today's uncertain environment.

- **IT investments that are linked to business risk, not just project risk.** Too often we focus on the technology outcomes that will be resolved by the next project. Meanwhile, the value of the project tanks as business conditions change. The real options approach captures both technology and business risk, allowing investment decisions to link up to corporate strategy.

- **Acquiring the discipline of learning and leadership.** When the CIO starts to

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model future options, he or she is not only articulating the link between IT strategy and business strategy but also establishing the decision points required by the leadership team over time. Investment becomes a responsive and leadership-driven process, not a single-decision event.

■ **Using IT projects to manage business risk.** By exposing the business implications of the project, the real options approach provides the IT team an opportunity to design features (like scalability, modularity and open architecture) that help manage the business risk profile.

IT Options

Many executives will intuitively understand the options characteristics found in IT projects. Investments in data warehouses, for example, create value through the ability to quickly develop

new applications. Similarly, an open architecture creates sourcing options for many companies. The challenge, however, is to move beyond intuition to find an efficient and practical way to apply

well as its size and relative importance. With this insight, the executive team can then determine the degree of analysis required to fully detail the proposed alternatives. Examples from two real IT

The power of IT real options lies in linking technology choices to shareholder value.

real options thinking to IT investment. We advise managers to start by defining the types of options frequently encountered, which clearly delineates the sources of option value in an IT investment as

options may help to illustrate.

Scalability options create opportunities to flexibly adjust to the scale of the business over time. Imagine a company whose strategy requires an aggressive

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market expansion into Europe and Asia, which will significantly increase the flow of transactions through the supply chain management system. However, the timing and size of the market expansion is uncertain. In this case, a real options analysis would help decision makers think through the timing of the IT capacity expansion by linking the value of IT investments to the range of possible business outcomes and by identifying the critical levels of key business variables that trigger the next stage of expansion. The real options approach allows executives to fully value the flexibility created by alternative investment strategies and to trade off the value of extensibility against cost.

Flexibility options allow a company to easily and quickly adapt product features or service offerings. In the IT world, new software development tools for e-mail allow mass customization of electronic commerce advertising and information and lead into personalized services. By investing in these packages, executives acquire an option that represents the opportunity to quickly and effectively make follow-on investments that could not have been achieved without this new business platform.

There are many more real IT options. Their power lies in how technology choices are linked to the delivery of shareholder value and how IT decisions become driven by business conditions.

The need for an approach like this is imperative. Business conditions have changed, and IT is increasingly at the center. If done right, real options in IT investments can create shareholder value in demonstrable ways. Companies that ask for less in their IT decision process will deliver much less as well. **CIO**

Martha Amram is president of Glaze Creek Partners LLP in Palo Alto, Calif. Nalin Kulatilaka is professor of finance at Boston University School of Management. John C. Henderson is professor of information systems, department chairman and director of the systems research center at Boston University. Amram and Kulatilaka are the co-authors of Real Options: Managing Strategic Investment in an Uncertain World (Harvard Business School Press, 1999).

Investment Tips

Six steps to exercising real options at work

THE GOLDMAN SACHS GROUP LP RECENTLY BOUGHT approximately 22 percent of Wit Capital Group Inc., a small, New York City-based Internet investment bank. Goldman also invested \$25 million in Archipelago LLC in Chicago, an electronic communications network (ECN), an alternative trading system to the NYSE and Nasdaq. Goldman uses E-Trade as a distribution channel for IPOs that it sells, and the company is looking at other ways to do business on the Internet. Cheap insurance or a portfolio of options on the future?

Goldman is a great company, but it can't predict the future. So the company is taking real options on the Internet by making a number of relatively small Internet bets. No matter how the future turns out on the Net, Goldman will be a winner. These investments have very similar characteristics as financial options. Their low initial cost allows you to defer making the larger investment decision until you know which path will be the winner. Like a venture capitalist, Goldman is counting that one or two winners will pay for all the losers and then some.

To make sure your company's investments will position it for success in the digital economy, follow these six steps:

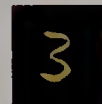


BROADEN THE WAY YOUR COMPANY LOOKS at technology spending by dividing IT investments into three different categories. Invest in IT infrastructure to streamline operations, connect to the outside world and focus on your customers. Implement traditional ROI projects to keep pace with your competitors in the relentless drive to become faster, better and cheaper. Finally, use real option investments in IT to ensure that your business can

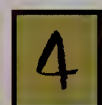
respond quickly and easily to changing business conditions.



PERFORM A DIAGNOSTIC CHECKUP on your company by mapping your current investments into the three categories (infrastructure, ROI and option creating) and assessing how each of these investments gives you an advantage, puts you at parity or places you behind your competitors.



MAKE NEW INVESTMENT DECISIONS in the context of your target portfolio to ensure proper balance and market impact.

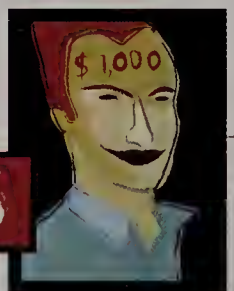


CONDUCT A SENIOR MANAGEMENT REVIEW of your portfolio of option investments once a quarter. Senior management must pay attention if these investments are going

to transform your company's business.



CHANGE YOUR INCENTIVE and reward system. Reward the team that reduces the uncertainty of the option investment rather than the team that gets assigned to the winner in the portfolio. Learn from the losers as well as the winners. The portfolio will win if you explore each option to its fullest.



EXERCISE THE WINNERS and abandon the losers. Fall in love with results, not ideas.

Jay Kingley is a partner in the digital strategy practice of Diamond Technology Partners Inc., a management consulting firm based in Chicago. He can be reached at kingley@diamtech.com.



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*A new breed of CEOs—
chief ethics officers—are policing
right and wrong in the workplace*

Business Sake

BY JENNIFER BRESNAHAN

Used to be all a company had to worry about was staying in business. Today, baby seals, the line worker's sense of self-worth and the minimum wage in Bangladesh all fall within the province of running a successful company.

Caring about such things has become the rule rather than the exception—not necessarily because it's the right thing to do but because being ethical engenders bottom-line results. Simply put, companies with solid ethics programs enjoy a competitive advantage in attracting customers, employees and investors. "How could anybody not

think that having a highly ethical organization wouldn't pay off?" asks Frank D. Walker, chairman of marketing research and measurement firm Walker Information Inc. in Indianapolis. "Who would you want to work for, work with and buy from? If everything was equal and you had a choice, wouldn't you pick the firm that you believed was the most ethical?"

At the most basic level, formulating a set of ethical guidelines prevents a company from getting into legal trouble down the road because it has a better chance than those without guidelines of detecting, resolving and forestalling ethical breaches. And having guidelines

ensures companies that punishment will be less severe. Federal sentencing guidelines passed in 1991 permit judges to reduce fines and jail time for executives proportionate to the ethical measures

Reader ROI

READ THIS ARTICLE
to learn

- Why some companies are spending millions to promote ethical standards
- The role that chief ethics officers play in creating, running and enforcing a company ethics program
- How leading organizations are structuring their ethics programs

a company has taken. In addition, businesses have realized that consumers really do care whether they engage in shady business practices. If there's any doubt on that score, consider the image problems companies deal with after a corporate debacle reveals ethical gaps in their practices. The tobacco industry comes to mind. "Companies are used to being in a

while—or at least decent and respectable.

An increasing number of companies are investing millions of dollars to promulgate an ethical code of conduct and are hiring a senior executive to serve as chief ethics officer (see "Snapshot: Chief Ethics Officer," Page 58). These chief ethics officers (note: their titles vary) have the task of ensuring their companies achieve outstanding results not by any means possible but by ethical means. In many companies, this is accomplished through a multilayered, unspoken pact between the company as a corporate entity, its customers, business partners and employees. This is how it works: The company pledges to its customers and business partners not to sacrifice quality and fairness for profit, and in exchange it hopes that customers and partners increase their sense of loyalty toward the company. Employees are expected to abide by the code of ethical behavior developed by the chief ethics officer's office. And in return, employees can expect the company to treat them with dignity and respect. Since employees are the linchpin of the company's ethical success, ethics programs often center around an internal scheme to communicate and enforce the message of this pact to employees. Many chief ethics officers develop elaborate dispute identification and resolution mechanisms and training programs to help employees make the right decisions. Following are the stories of how several ethics officers are helping their companies gain a sense of moral responsibility in hopes that it will eventually translate into competitive advantage.

"It's simply less expensive for us to deal with problems swiftly and efficiently internally than to go through the EEOC, courts and *The Wall Street Journal*."

—WILLIAM GIFFIN, VICE PRESIDENT OF ETHICS AND BUSINESS PRACTICES
AT SEARS, ROEBUCK AND CO.



dog-eat-dog world, and when you're dealing with [other] dogs, you bite, you chew," says W. Michael Hoffman, executive director of Bentley College's Center for Business Ethics in Waltham, Mass. But taking a bite out of the competition using any means possible is no longer acceptable in the eyes of the public. "In fact we're coming to the realization that a business without ethics is a business at risk, and [not having an ethical program] will catch up with a company more often than not," he says. Finally, ethical behavior also helps companies attract and retain employees who wish to be part of something worth-

Come See the Ethical Side of Sears

Well known for its Craftsman tools and DieHard batteries, Sears, Roebuck and Co.'s strategy to reestablish itself as a retail leader has been to stress its softer side. But the softer side that we're urged to come see doesn't stop at the pretty dresses and delicate sheets advertised on television. It also includes ethics. For Sears, being ethical means balancing the interests of its three main constituencies: customers, employees and shareholders. Where most companies get into trouble is to concentrate on only one of these groups, usually the shareholder, says William Giffin, vice president of ethics and business practices at Sears. Giffin adds that Sears Chairman and CEO Arthur C. Martinez stresses that in fulfilling his goal of making Sears a compelling place to shop, work and invest, the way Sears does so is just as important as whether it actually succeeds.

Martinez took the helm of the \$41 billion Hoffman Estates, Ill.-based Sears Merchandise Group in 1992 and two years later approved the cre-

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Snapshot: Chief Ethics Officer

Job directive: Promote ethical business practices

Average salary: \$118,000

Average experience: 16 years in human resources, general management, legal, finance and auditing

Quantity: In 1991 there were 12 members of the Ethics Officer Association. Today there are almost 600, most from Fortune 1000 companies

Reporting structure: 32 percent report to the CEO, most of remaining report to a senior VP or general counsel

Main gripe with the position: Frustration over lack of real commitment from the executive team; feelings of career insecurity from being blamed for employees' ethical transgressions; feeling like a corporate nanny or an ethics police officer

Budgets at their disposal: Over 65 percent have budgets of \$500,000 or less for ethics office activities

SOURCE: "1997 MEMBER SURVEY," ETHICS OFFICER ASSOCIATION OF BELMONT, MASS.

ation of the ethics and business practices office. Giffin, a 31-year Sears veteran who began his career as a store manager and eventually moved to HR, was chosen to head the department. Giffin and his 11 direct reports have since become an integral part of daily operations at Sears. "My team is welcome as part of the [day-to-day] process," says Giffin.

Giffin and his people are charged with promoting the values in Sears' 15-page code of conduct. They do this by serving as a resource for employees to use if they run into ethical quagmires that could potentially affect one of the company's three constituencies. Sears' ethics program differs from some in that it is not preoccupied with catching and punishing transgressors. "We don't offend employees by treating them like they're one of 10 people who are doing something wrong." Rather, the focus is on helping employees make the right ethical decisions. For example, a sales rep might be unsure whether he should accept a gift from a vendor when not accepting it might be seen as impolite.

An important component of the goal of helping employees make the right ethical decisions is an ethics assist line. The hotline gets 15,000 calls per year from employees looking for general guidance and clarification of ethical issues, says Giffin. The assist line representatives, selected from various corporate and functional departments within the com-

pany, receive an average of four hours of training per week in business knowledge and conflict resolution skills. Moreover, to evaluate the performance of the assist line, people from a third-party company pretending to be Sears employees call monthly.

When there is an ethical problem that could affect the customer, the representatives are trained to bring in the employee's manager or to route the problem directly to Giffin. All managers receive ethics literature, take training courses at Sears University in Illinois and re-sign a contract annually signifying their commitment to the company's code of conduct. Giffin estimates that having a formal conflict resolution mechanism in-house has yielded a 4-to-1 return by avoiding scandals and drawn-out conflicts. "It's simply less expensive for us to deal with problems swiftly and efficiently internally than to go through the Equal Employment Opportunities Commission, courts and *The Wall Street Journal*. It's not only the right thing to do, it's the practical thing to do," he says.

The point of all this focus on the employee, of course, is satisfying the customer. "We've built a covenant of trust with the American consumer over 100 years. It's ironic that it can be so fragile that if we don't protect it every day, we run the risk of losing it," says Giffin. "People believe in Craftsman and DieHard batteries. Why? Because if you buy a Craftsman tool and it breaks in your lifetime, we give you a new one. That's pick-and-shovel work, but the minute we starting handling that badly, we lose our covenant."

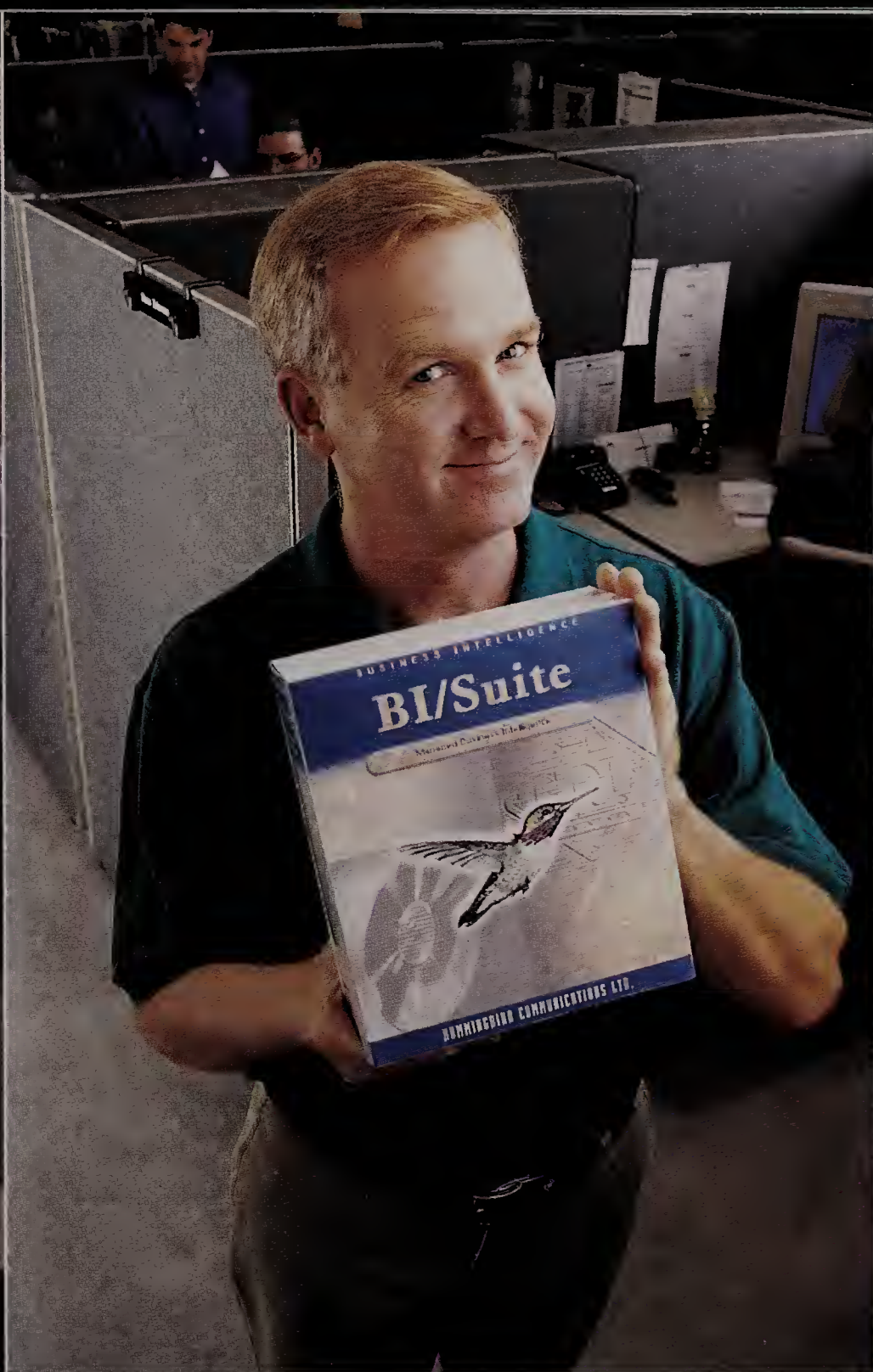
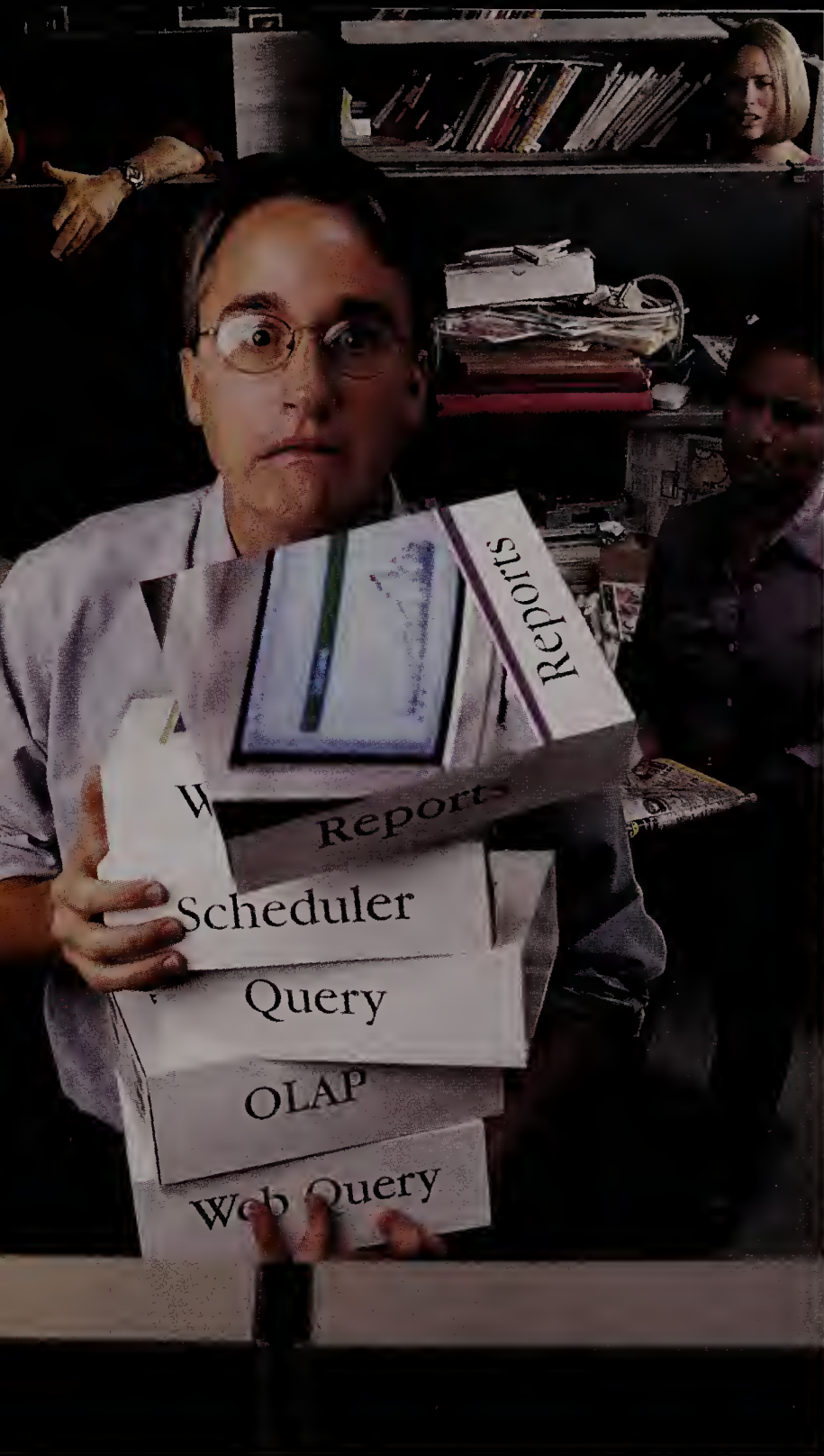
Moral Health at Columbia/HCA

If anybody ever needed an organized ethics plan it's the \$18.8 billion Columbia/HCA Healthcare Corp. Vilified in the press and pursued by federal officials for questionable billing practices and fraud, the

Ask the Expert

cio.com
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Have a question about the emerging role of chief ethics officers on the corporate landscape? You can pose it to Alan Yuspeh, senior vice president of ethics, compliance and corporate responsibility for the Nashville, Tenn.-based Columbia/HCA Healthcare Corp. From now until June 30, Yuspeh will be available at asktheexpert@cio.com to offer insight and advice on the impact an ethics executive can have and the challenges of building a strong ethics program within a company.



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WORKPLACE ETHICS

Nashville, Tenn.-based hospital chain was in desperate need of a new image after the charges were brought to light in early 1997. Investigations are ongoing. In July of that year, the board brought in a new management team to clean up the mess and in October hired Alan R. Yuspeh as senior vice president of ethics, compliance and corporate responsibility. His mission was to develop what the company hopes will be the most robust, comprehensive ethics and compliance program in health care.

Yuspeh was a good choice for the position. Formerly general counsel to the U.S. Senate Com-



“I’ve gotten a lot of e-mails from employees that say things like, ‘I feel proud to be part of an organization that supports these kinds of values.’”

—ALAN YUSPEH, SENIOR VP OF ETHICS, COMPLIANCE AND CORPORATE RESPONSIBILITY
AT COLUMBIA/HCA HEALTHCARE CORP.

mittee on Armed Services and chief of staff for now retired Sen. J. Bennett Johnston of Louisiana, Yuspeh was executive director of the Defense Industry Initiative (DII) on Business Ethics and Conduct from 1987 to 1997. He joined Columbia as one of the company’s 11 most-senior executives. When Yuspeh arrived, he found only a rudimentary compliance program with a perfunctory, legalistic set of ethical guidelines that no one could understand. He immediately set about drafting a code of conduct. Yuspeh

put it on the company intranet for comment and received several hundred suggestions from the company’s workforce. The finished product was distributed to Columbia’s 285,000 employees and emphasizes the values of compassion, honesty, integrity, fairness, loyalty, respect and kindness.

Yuspeh then constructed a massive ethics program with the objective of ensuring that all Columbia/HCA employees are familiar with basic organizational values and relevant health-care laws, regulations and policies. To succeed in this endeavor, Yuspeh created an organizational support system, encompassing an ethics hotline that answers about 1,200 employee calls annually and a sophisticated ethics training program for all employees. Each of Columbia’s 300 hospitals has an ethics and compliance officer, usually the hospital CEO. “This is too important not to have attention from the very top,” explains Columbia/HCA Chairman and CEO Thomas F. Frist in the 1997 annual report.

The next step in Yuspeh’s vision is to leverage technology to support these efforts. He is currently working with Columbia’s information systems department to create an automated training-tracking system. For example, Yuspeh will be able to push a button to see whether a given hospital CEO has completed his or her mandatory units in compliance training. The system will show which units, if any, remain incomplete and will also track the completion of individual compliance training profiles for all employees. Another system that is being considered will conduct automated checks on billing to ensure compliance with the sometimes arcane and complicated Medicare policies.

Although the company incurred a net loss of \$305 million in 1997, there were immediate indications that Columbia’s ethics program was slowly helping the company climb back to credibility in the public’s

eyes. For the first time in two years, patient satisfaction levels rose, according to the company’s 1997 annual report.

“[Columbia/HCA managers] have been particularly concerned in light of the investigation that we develop a sense

of self-confidence,” says Yuspeh. “I’ve gotten a lot of e-mails from employees that say things like, ‘I feel proud to be part of an organization that supports these kinds of values.’”

Elevating Ethics at United Technologies

Hartford, Conn.-based United Technologies Corp. (UTC) does not stop its ethics program—called business practices—at merely serving the interests of cus-

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tomers, employees and shareholders. The \$25.7 billion UTC, whose best-known products include Pratt & Whitney aircraft engines, Otis elevators and Carrier heating and air-conditioning systems, also includes its competitors and its vendors. "You recognize that you have

sel. "There is no such thing as a typical day in the world of ethics because you just never know what phone calls you're going to get," says Gnazzo. But on any given day, he is likely to wrestle with such issues as who—company or employee—gets to keep a prize laptop won by an employee at a work-related conference. "Part of the reason you have human beings in this job is there is no such thing as the one right rule," says Gnazzo.

UTC has one of the most extensive ethics programs in corporate America. It employs 160 designated business practice officers around the world who are chosen from the upper- and middle-managerial ranks. The business practice officers act as a resource for guidance on the company's ethical code, coordinate training programs on business practices and oversee investigations of possible code violations. The business practice officers serve on a part-time basis, in addition to their scaled-back managerial roles. "Most people see the position as an opportunity," says Gnazzo.

Then there are 1,320 administrators not under Gnazzo's jurisdiction (to ensure legal confidentiality) who run what's referred to as the Dialog/Ombudsman program. It's a confidential communication program that allows employees to raise issues or concerns to Dialog administrators or to an ombudsman. If questions involve compliance issues, they will be referred to business practice officers. Otherwise, questions might be routed to one of seven appointed neutral ombudsmen. The ombudsmen investigate the reports, send them to the appropriate manager and recommend policy changes and other corrective actions. Serious ethical or legal problems, like a manager pressuring an employee to bribe a supplier, are sent directly to Gnazzo.

Gnazzo insists that buy-in from the top has been the main reason for the success of UTC's business practices initiative. "I'm one of the lucky [ethics officers]," he says. "The program isn't going to work if I don't have the full direction and control from my management and board of directors. The program would look great on paper, but it wouldn't mean anything. It's the fact that the CEO and division presidents stand up and say [to the entire company], 'You will comply, and you will be ethical.' That makes the difference." **CIO**

Jennifer Bresnahan is a former senior writer at CIO and can be reached at jab7wh@virginia.edu.

Under Pressure

AS TECHNOLOGICAL INNOVATIONS CONTINUALLY RAISE THE BAR ON PROFITABILITY, workers feel more pressure to meet financial quotas, finish their duties faster and beat their yearly goals. The pressure can lead some to behave unethically or illegally. (See Page 58 for more ethics statistics.)

- **60** percent of workers feel a substantial amount of pressure on the job, and **27** percent feel a great deal of pressure.
- **56** percent of workers feel some pressure to act unethically or illegally on the job.
- **48** percent said that due to pressure, they had engaged in one or more unethical and/or illegal actions during the last year. The most frequently cited misbehavior was cutting corners on quality control (**16** percent), followed by covering up incidents (**14** percent), abusing or lying about sick days (**11** percent) and deceiving customers (**9** percent).
- Those in manufacturing (**26** percent) and health-care (**24** percent) industries reported the highest level of pressure to act unethically or illegally; midlevel managers most often felt pressure to behave unethically (**20** percent), and employees of large companies cited pressure more often than small businesses (**21** percent versus **14** percent).

SOURCE: "SOURCES AND CONSEQUENCES OF WORKPLACE PRESSURE," A 1997 STUDY BY THE ETHICS OFFICER ASSOCIATION AND AMERICAN SOCIETY OF CHARTERED LIFE UNDERWRITERS & CHARTERED FINANCIAL CONSULTANTS

some responsibilities to your competitor in terms of not lying about what your competitor's product can do. The golden rule has a lot to do with this," says Patrick Gnazzo, vice president of business practices. Referring to vendors, he adds, "Vendors receive letters from the company detailing the ethics program and assuring them that any ethics problems that they report will be swiftly dealt with." These are the kinds of values that Gnazzo insists have been a central reason for UTC's success. "What do we get out of [being ethical]?" asks Gnazzo. "We get to stay in business and do really well and have people want to continue to do business with us."

A former trial attorney for the Navy, Gnazzo previously held six different positions in UTC, including stints in the legal department and international marketing. He currently reports to the general coun-



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Data Waste

This year corporate America will spend nearly \$30 billion on online information services. Of that, \$21 billion may be wasted.

BY LEONARD M. FULD AND KENT POTTER

CORPORATE LIBRARIANS KNOW THE SCORE. SO when we wanted to know how effectively major companies use the information they buy, we talked to librarians at seven large businesses. In their opinions, companies fail to use as much as 70 percent of all the data they purchase. Run this estimate against the nearly \$30 billion of Web and online services that research company Simba Information Inc. in Stamford, Conn., predicts corporations will purchase in 1999, and you get \$21 billion. While the poll and its numbers are admittedly informal, the issue raised is relevant: Companies waste a lot of expensive data each year.

What is data waste? We define it as the amount of online data a company purchases minus the data actually used by that corporation. Organizations often buy numerous online data services they do not need or purchase services with overlapping content. If a large corporation contracts for approximately \$10 million of enterprise-wide online services, our librarians would estimate that it could be wasting as much as \$7 million of the total.

If you're looking for a common example of data waste, check out your company's intranet. Does its home page feature a news stream that races along the upper end of the desktop screen? These tickers create almost no decision-producing intelligence—in other words, data waste. And data waste can turn into data overload when a manager can't find critical information in the sea of irrelevant data flooding the corporate networks. Once workers start wading through useless information or hunting for lost data, it's a short step to decreased worker productivity.

"Wasted data certainly has an impact on productivity and

overall expense," says Herbert M. Baum, president and COO of Pawtucket, R.I.-based Hasbro Inc., one of the nation's leading toy manufacturers. Part of the reason for data waste, according to Baum, is its source. "I have found that when you buy data from an outside source, a lot of it is irrelevant," he says.

Data from outside sources, however, isn't inherently irrelevant. It's just that many companies are buying too many, or badly chosen, data services.

The Causes of Data Waste

As with any sort of physical pollution, companies must attempt to control data waste. In order to do so, managers should root out the causes, including the following:

- Many executives ignore purchased online data, thinking it's not current. And since other companies have access to the same information, management sees little competitive advantage in using such data.

- Volatile business markets can cause a company to react and buy even more data rather than use the data in its existing data pool. This is a particular problem in fast-moving industries such as telecommunications, pharmaceutical and financial services. Corporate managers latch onto myriad new data sources in hopes of learning something new that will help them stay ahead of their rivals, more effectively support customers or merely survive.

- Companies tend to toss their procurement strategies to the wind when it comes to online data. Many of our clients have few, if any, central rules for buying online data. Departments often buy data separately instead of forming buying coalitions and leveraging corporate purchases for enterprisewide discounts.

- Everybody wants the latest and greatest information,

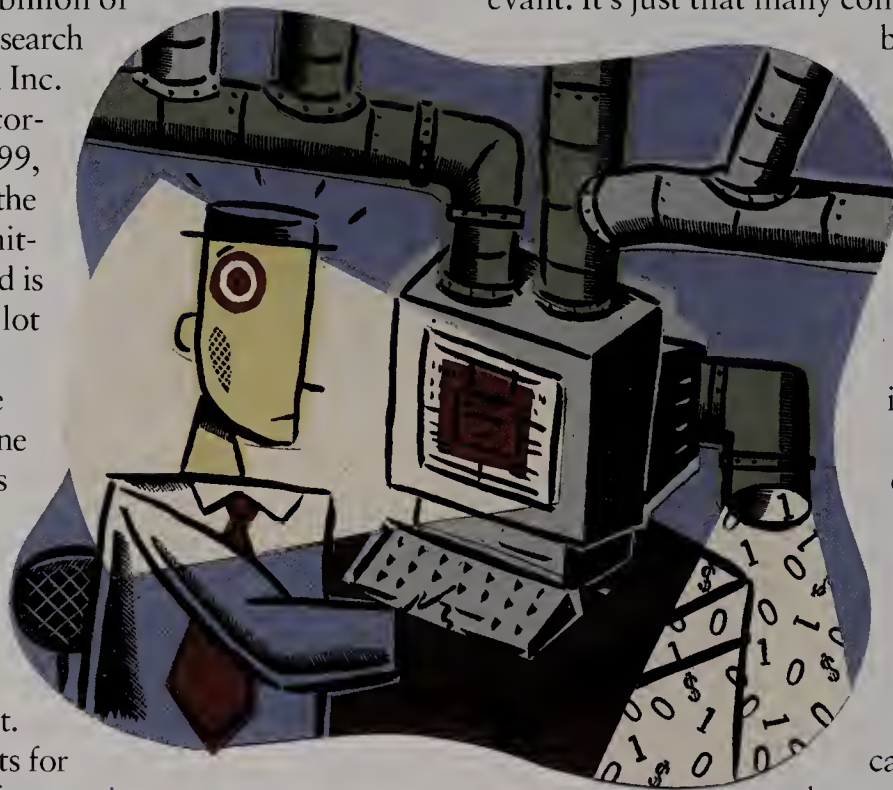
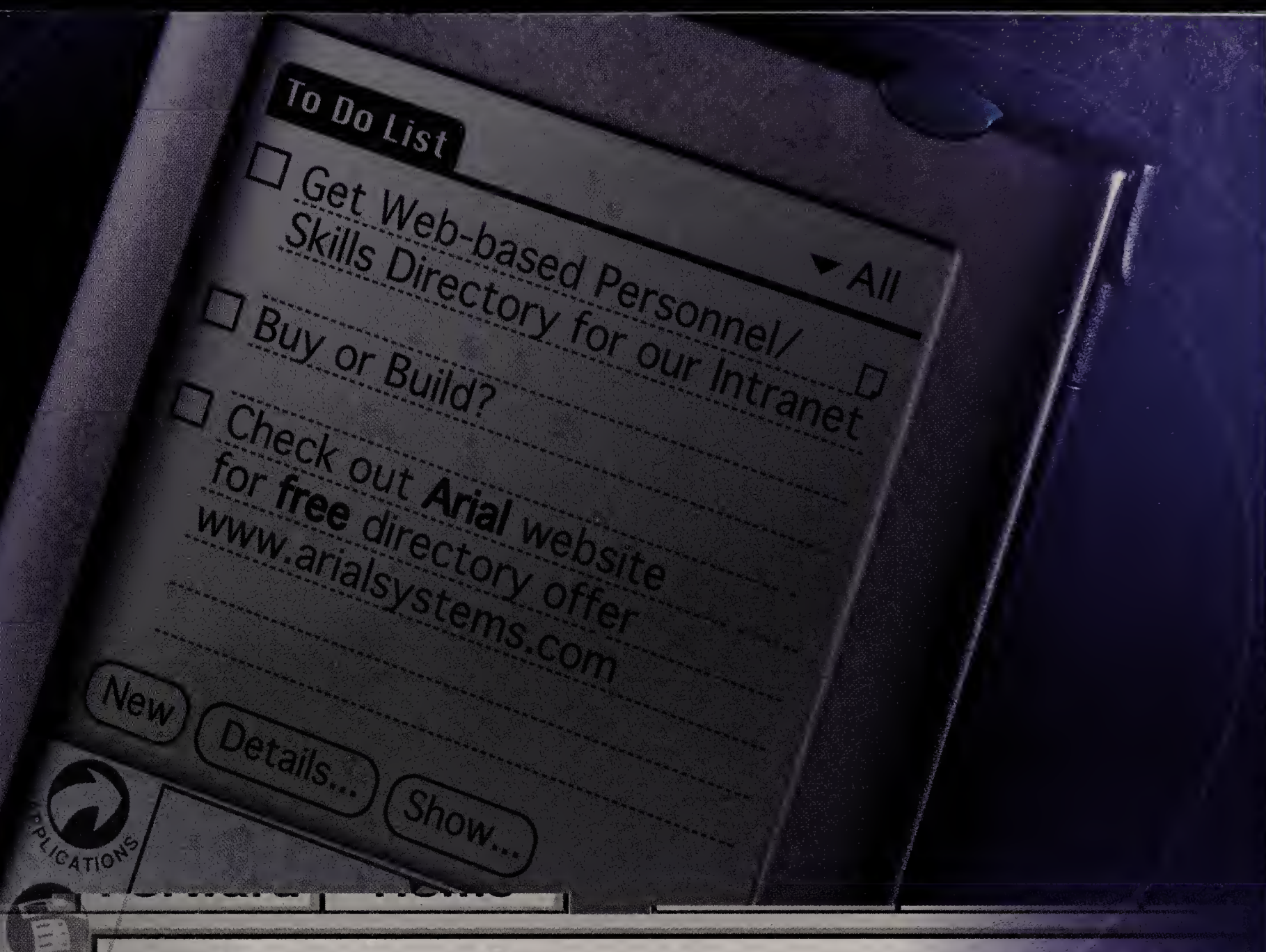


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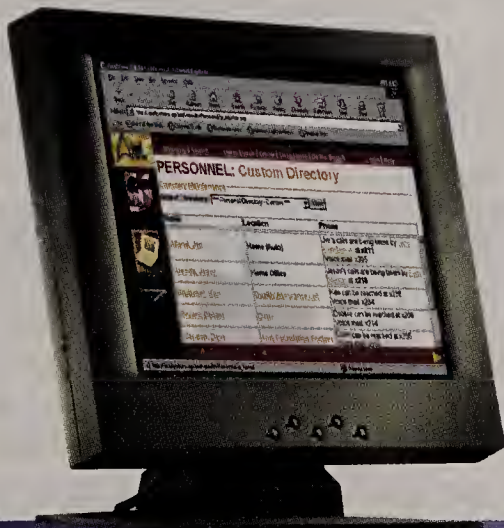
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whether they need it or not. In one instance, a major corporation even experienced a data waste meltdown. The company, a business unit in a financial services firm, purchased an online push technology news service. The service offered limited filtering capabilities that forced everybody to receive almost the entire news feed. Nearly everyone signed on, and volumes of mismatched data poured into the firm. Hundreds of individuals at the firm received copies of the same news items, all in full text. Just a few weeks after installing the service, the company's servers froze from too much of the wrong data.

Minimizing Data Waste

Just as any executive worth his wingtips will have a strategy for keeping on budget, you can plan to buy data frugally and wisely. With a little analysis and upfront work, the following tips can save money and time.

Buy smart. Every large corporation should have an integrated buying strategy for online data. Somebody, whether it be you or a corporate librarian or the purchasing manager, needs to assemble all potential user groups, determine who needs to know what and tailor unique packets of data to suit the needs of each group. Include your firm's librarians on this buying team. Since many of the online services offer similar news content or repackage the content from common sources, you need these research experts to analyze provider content and help the procurement folks parse each service into clear, distinct categories.

Map data. Data mapping is the ability to match specific strategic and tactical business needs with the sources themselves. By mapping data, you'll be able to pinpoint which data sources are either too general or miss your organization's strategic and tactical needs altogether.

Data mapping demands that you first find out what your audience needs. In the case of one client, we interviewed more

than 20 senior managers and discovered that nearly every person had the same five information needs in common. For example, almost all the managers wanted competitive intelligence on the new financial services technology being delivered by the company's competitors.

But when we explored the online and intranet-available data the company had

research and news may only reinforce hipshot analysis for crucial decisions, as anxious analysts snatch large stacks of available information to confirm their biases. Using piles of such data is not the way to shape markets as a leader. It is a way to bog down decision makers.

Avoid using old data for new markets. Companies need to rebuild their data

pools for today's market, ideally doing so every five years or less. But most corporations rely on obsolete data that's nearly useless for the new marketplace.

BellSouth Corp. in Atlanta confronted such a situation when it faced the proliferating competition of nontraditional telecommunications networks such as wireless, cable and Internet firms. New rivals brought with them new competitive strategies and a demand for wholly different pieces of market data. BellSouth widened its data net, using data from interviews with distributors, suppliers, industry trade associations and other local tech-

nology sources.

In Brazil, for example, BellSouth International gained significant market share in the cellular market by using Brazilian information sources that lay outside the traditional telecommunications data boundaries.

Data waste is not necessarily a new problem, but it is made urgent by the accelerating pace of the Information Age. Before your company spends millions on electronic information services, ask yourself this: How much—and what kind of—data does your company need? Eliminate the rest—fast. **CIO**

Leonard M. Fuld is president and founder of Fuld & Co. Inc., a Cambridge, Mass.-based competitive intelligence consulting and research firm. Kent Potter is vice president of intelligence processes and systems at the company. They can be reached through www.fuld.com.

Vital Stats

Reuters Business Information surveyed 1,000 business executives about their attitudes toward business information. Among the findings:

Sixty percent of respondents believe the cost of gathering information outweighs its value.

Fifty-four percent worry about making poor decisions in spite of all the information at their disposal.

Seventy-one percent of those surveyed believe the stress of dealing with overlarge quantities of information reduced job satisfaction and increased workplace tension.

Eighty-three percent of the respondents think they could use information more wisely if companies trained them to gather, manage and use information; moreover, 58 percent say their companies currently offer no such training.

SOURCE: "GLUED TO THE SCREEN: AN INVESTIGATION INTO THE EFFECTS OF INFORMATION ADDICTION WORLDWIDE," REUTERS BUSINESS INFORMATION, DECEMBER 1997
WWW.REUTERS.COM/RBB/RESEARCH/ADDICT.HTM

purchased, we discovered that most of the sources proved totally irrelevant to those five information goals. The needs assessment then allowed us to map to other online sources—some even free on the Net—that better matched their day-to-day activities.

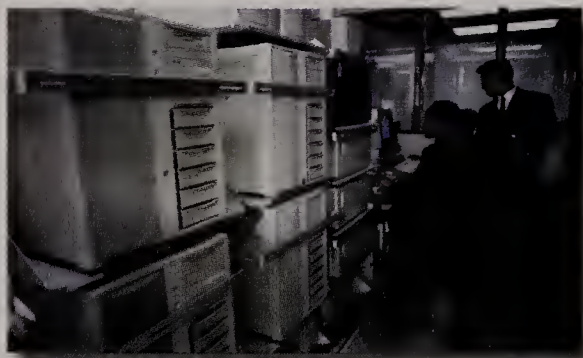
Know the difference between relevant versus significant. Relevancy doesn't reduce data waste, significance does. Modern search engines and the latest in artificial intelligence database-mining software do a remarkable job identifying relevant data. These packages will tell you how close your hits resemble the search terms you placed in the system. But software engines do little to determine how significant the findings are to your ultimate decision. Do not expect a software package to solve the data waste problem. At best, software reveals the relevance of a data pool, not its significance. Attempting to ingest mountains of relevant but insignificant syndicated

Sometimes You Don't Know What You've Got Till It's Gone



Remember that autographed baseball you had as a kid that you wish you still owned? And what would you give to get your old car back, the one that would be a classic today? We don't always recognize the true value of things until it's too late. Some executives don't realize how dependent their organizations are on information technology until something goes wrong.

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That's the Ticket

Ticketmaster brings the concert hall to your desktop—almost

BY CAROL HILDEBRAND

EVERYBODY KNOWS BRUCE SPRINGSTEEN IS COMING to town this summer, but nobody knows when. If you happen to be a big enough fan to own an entertainment center stuffed with the Boss's bootleg concert tapes, you can appreciate the value of knowing precisely when those sacred cardboard ducats will go on sale. And you'll probably feel less guilty forking over \$150 for a ticket if you can be assured that the seat you get won't induce nosebleeds. Assuming all this, fans might just be interested in news that Ticketmaster Corp. now provides both these services to ticket buyers who log on to *my.ticketmaster.com*.

The service, called My Ticketmaster, lets customers find out about upcoming attractions and purchase tickets through their own personalized Web sites. Site users list their names and addresses, local entertainment venues and what types of events they'd like to track: sports, music, family shows, dance. (Within categories, page owners can further specify areas of interest, such as baseball versus basketball or The Beach Boys versus The Beastie Boys.) Whenever they log on to their site, the page will then showcase attractions tailored to their stated interests. The newest attractions get pride of place at the top of the page, followed by complete listings for shows that match the specified areas of interest and geographic location.

An optional push feature called Event Ticket allows users to download an applet that runs on the desktop and notifies them by e-mail as soon as tickets to events high on the user's interest profile become available.

For those lucky enough to live in cities that are popular on the concert rounds, like Los Angeles and New York City, My Ticketmaster also allows users to check out interior views from

the best available seats at more than 75 venues across the country and to take virtual tours of the venue.

Robert Perkins, executive vice president of ticketing for Ticketmaster Online-CitySearch Inc. in Pasadena, Calif., says that building My Ticketmaster "was an easy decision to make." He explains that Ticketmaster is in essence a distribution company, acting as a central aggregator of ticket sales for thousands of performance venues nationwide. The Web represents a distribution channel worth millions, and the company has sold tickets over the Web since September 1996. (Ticketmaster also sells tickets through *www.ticketmaster.com*, which requires less PC power and technology know-how than does My Ticketmaster.) So

deciding to extend Ticketmaster's brand by adding online bells and whistles didn't tax Perkins' brain overlong. "The ultimate goal is to give consumers choices," he points out, and says that My Ticketmaster's features were choices that customers clamored for in focus groups. "Ticket buyers didn't want to wait until the newspaper's calendar section came out," he says. "They wanted to know about tickets as soon as they became available."

More distribution channels also mean more sales. A recent Ticketmaster survey of 8,000 online purchases revealed that 10 percent of consumers

would have bypassed Ticketmaster by purchasing tickets at the box office, and another 12 percent would not have bought tickets at all. Perkins says he's hoping to generate 10 percent of Ticketmaster's total ticket sales through the company's Web sites. In fact, Perkins says that more than a million different customers have used the original Ticketmaster Web site. He notes that it is too early to talk numbers for My



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Handshake

Ticketmaster, which debuted in February 1999, but says "we're satisfied with the number of users we're getting."

The point of My Ticketmaster is to augment, not supersede, the original site, and Perkins clearly views it as a work in progress. "This was done because we wanted to get familiar with new technologies and techniques," he says. The site, to its credit, does showcase some pretty smashing technology. It uses two technologies to show the seating arrangements. One is VRML, which uses virtual reality renderings of venues. Larger stadiums with configurations that change with the events (basketball, hockey, circuses and so on) tend to appear in VRML, since it's easier to simulate all those different looks virtually with VRML than with the other technology, IPIX. Smaller venues that don't change as much get the IPIX treatment. It uses a special camera and lens to take a 360-degree photo of the venue that the user can move around in.

Music to Your Ears

Telephone technology gets an upgrade

WHAT'S THE BIGGEST reason people dislike buying tickets over the telephone? The interminable drone of the busy signal, telling you that faster dialers are getting your great seats. But Brian Delaney, vice president of call center operations at Ticketmaster Corp. in Los Angeles, is working to make the busy buzz a thing of the past. "We're trying to improve the

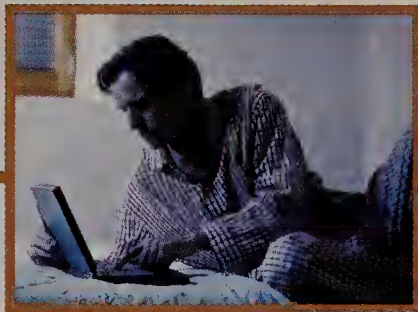
level of service through technology," he says. He cites the following examples as successful improvements.

Connected call centers. All 17 U.S. call centers are linked with T1 lines so that if one center is busy, the network will ascertain which centers have available operators, at the proper skill level, and route the calls accordingly.

Given all the cool technology, it's not surprising to find that Perkins bills this as a "high-end site" for the "higher-end user who's familiar with some of the most robust capabilities of the Internet, such as downloading plug-ins." The site's technical restrictions do tend to

self-select the audience, and it's not simple for the average curious-but-untutored viewer to get things to work.

We gave it a try in the office. First we set up a personal Web page, which was simply a matter of filling out a form outlining categories of preferences; for



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Interactive voice response. Ticketmaster has installed over 1,000 ports that let a caller buy tickets using automated responses. When a customer calls, the system requests that she say the name of the event of interest. A human operator then routes her into the voice response script that handles that event, and she orders the tickets without ever talking to a live operator. This processes orders faster, says Delaney. "An operator can route 100 calls an hour rather than handling 15 or 20 live conversations," he says.

Customized service. Delaney plans to

use a database to offer service tailored to each caller. As a call hits the switches, operators will use the incoming phone number to pull a history from a database of each customer's previous buying habits and guide the call accordingly. For example, if a buyer has a history of buying Red Sox tickets along the first or third base line and wants to visit Fenway Park again, the operator could start the conversation with, "We have tickets available for both the third base and first base lines. Which would you prefer?"

—C. Hildebrand

example, we could choose concerts as a category. Under that we could choose different types of concerts, such as adult contemporary rock or country. So far, we were cooking with gas.

Things got more complicated when trying to download the applications that

run the snappier options, like 3-D viewing of entertainment venues and the Event Ticket, which promised to push new concert announcements to the desktop. In fact, we couldn't do it using a Netscape browser; we got repeatedly bumped into "not found" limbo. CIO

Communications Inc.'s webmaster had better luck, however. He downloaded both apps, which took about 20 minutes. The viewing option proved a slight disappointment. We found only one viewable venue in our area, and it offered a general virtual tour, not a seat-specific view. We visited Radio City Music Hall with similar results. My Ticketmaster is definitely titillating but may need to wait until all that high-end technology is more of a commodity before gaining a wide following. Perkins, however, hopes that will change as fast as anything else does in Internet time. "As the technology improves or becomes invisible, the site will get more use," he predicts. "Or maybe, someday, features of My Ticketmaster will become part of our regular site." **CIO**

Senior Editor Carol Hildebrand can be reached at cjh@cio.com. Senior Editor Alice Dragoon contributed to this article.



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Remote Possibilities

*Outsourcing remote access can reduce costs.
But where, and by how much?*

BY KIRAN NARSU

LOOK AROUND ON YOUR NEXT AIRPLANE FLIGHT and count the number of people *without* notebooks. As intensifying competition pushes employees closer to their customers, suppliers and partners, legions of laptop-laden executives and marketing and sales professionals are hitting the road, aiming to close a deal or to press the flesh.

Naturally, it falls upon IT departments to keep the mobile professional connected to the office while on the road. The most critical component is a reliable, easy-to-use remote access facility that provides mobile workers with critical e-mail, groupware and other applications. Historically, most IT shops started small with remote access and expanded as demand increased. The resulting mass of tangled cables has grown into an infrastructure support nightmare. Key network operations and management personnel spend far too much time in the tedious management of an increasingly intricate remote access infrastructure and are not able to spend time on other impor-

tant and more engaging tasks. Giga Information Group Inc. terms this the distraction factor, and it adds to the challenge of retaining highly trained employees in a tight labor market. A common complaint among IT staff is that individual talents are being wasted—who wants to manage modems when they could be working on redesigning the company backbone for better performance or deploying a next-generation intranet? Subsequently, a critical goal of IT should be to eliminate or reduce the distraction factor by redeploying bored networking professionals to more substantial projects where their talents are better used.

With that goal in mind, many CIOs consider outsourcing remote access. And in the absence of a clear, quantitative demonstration of the cost benefits of eliminating the distraction factor, IT management often wins CFO approval for outsourcing simply by falling back on the accepted notion that outsourcing saves money.

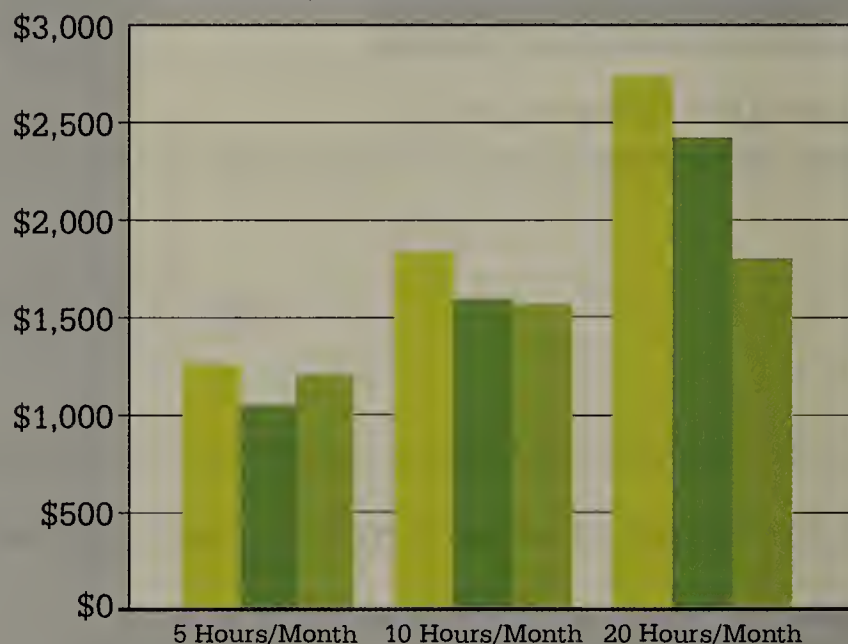
To be sure, there is usually plenty of room to save money

Annual Per-User Remote Access Costs

Savings depend on volume

The cost differences between in-house and outsourced providers of remote access increase as user hours increase. Internet outsourcing shows the greatest savings with high volume, but may entail further costs for additional security components.

In-House
Non Internet Outsourced
Internet Outsourced



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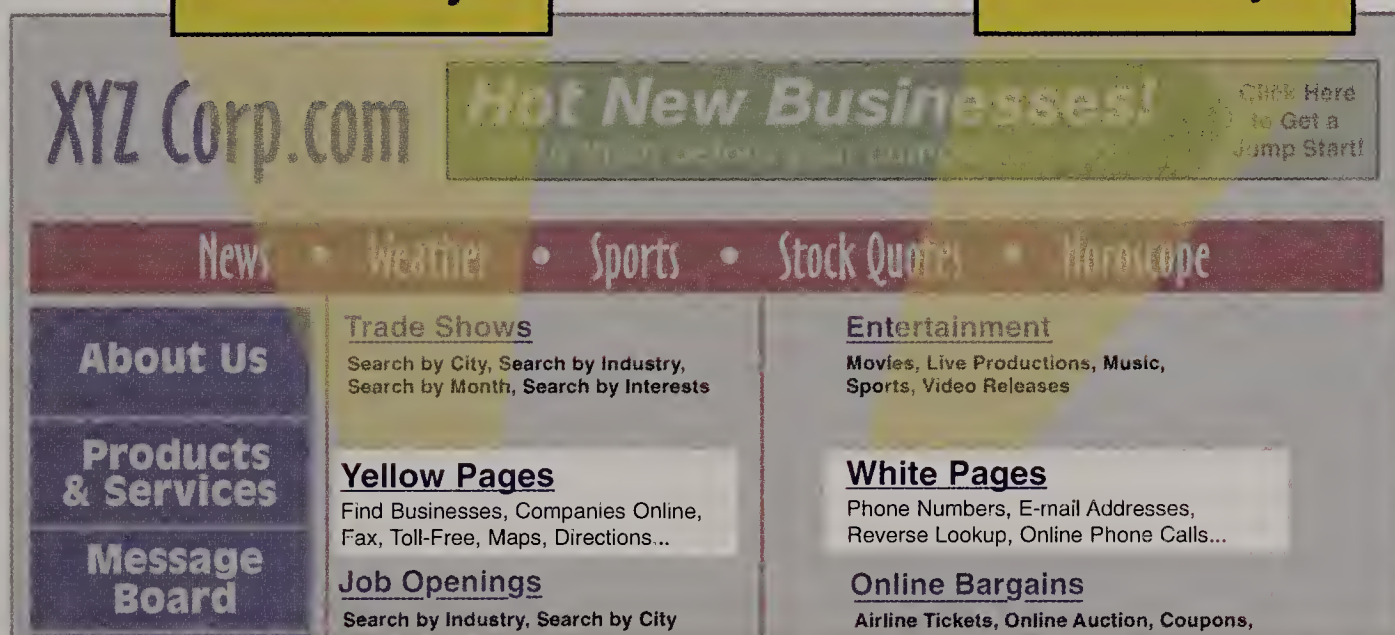


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Checks & Balances

on remote access. IT has watched in horror as telecommunication access charges to connect remote workers grow exponentially, draining the telecom budget. The costs of having a toll-free telephone number for remote user access, typically 8 cents to 10 cents per minute

managed virtual private network (VPN) services—commonly have a flat-rate pricing structure.

But why aren't the savings from outsourcing far more dramatic? After all, if we believe the vendors, which promise radical cost reductions), we expect a sig-

tinued resolutely in that direction anyway, convinced that eliminating the distraction factor was more strategically important than saving a few bucks on telecom costs. Conversely, many companies have decided to throw in the towel, resigning themselves to main-

If the CEO can't get into the outsourcer's network after multiple tries, the blame will fall not on the provider but on the IT organization.

even at large organizations, quickly get out of control, with users—who perceive the access to be free since *they're* not paying for it—staying online for hours at a time. Outsourcing remote access allows mobile users to dial a local number in most areas of the United States and abroad, thus replacing exorbitant telecom charges with lower per-user access rates. You pay the outsourcer to maintain the network, and it will pass the savings along to you. At least that's how it's supposed to work.

Understanding True Cost Savings

So how does outsourcing work? The key cost elements of a remote access infrastructure are the one-time infrastructure expenses (and subsequent charges to expand and enhance the facilities), recurring service fees, and one-time and ongoing support payments.

All forms of outsourcing, whether Internet-based or not, have the potential to save money over in-house remote access, mostly by lowering recurring service fees, which represent the largest portion of in-house remote access costs (see "Key Cost Factors," Page 75). However, we've found many instances where outsourcing simply hasn't saved money (for example, if a significant percentage of the mobile workforce is within a local call to the corporate offices). "Annual Per-User Remote Access Costs" on Page 73 shows the potential cost savings of outsourcing versus in-house provision of remote access. Note that savings become more significant on Internet-based services as user hours increase, primarily because Internet service providers (ISPs)—and even many providers of

nificant difference. Giga believes that two central factors affect the potential savings of outsourcing:

- The percentage of users able to access the system through a local call.
- The incremental costs to support mobile workers in an outsourced environment (specifically Internet-based VPN solutions).

Upon closer examination of outsourcing costs, it turns out that if the percentage of users within a local call to the current infrastructure is relatively high (say, 20 percent or more), the cost savings of outsourcing are largely wiped out. The hourly cost of the provider can exceed the hourly cost for local phone use. Moreover, the notion that outsourced service providers offer local blanket dial coverage is simply not true. Giga estimates that, at best, mobile users will be able to find a local number 80 percent to 85 percent of the time—meaning that at any given time, 15 percent of the user base must dial a toll call to access the outsourcer's network. These two percentages together conspire to reduce the real savings that outsourcing can provide. Regardless, many companies still choose to outsource, even in the face of limited cost savings, simply due to the great desire to wipe out the distraction factor and redeploy key personnel.

Before deciding to outsource, the IT organization should carefully measure current remote access usage by month, business unit and location. We've run into many organizations that have found, after a long trip down the path toward outsourcing, that they had actually spent more money by outsourcing. Some of these organizations have con-

taining, improving and augmenting the current infrastructure and trying to reduce, but not eliminate, the distraction factor. In deciding which option is better for your organization, tackle these key issues first:

- Understand the current system. How large is the user population? What percentage of users actually dials in more than once a month? What is the average number of minutes per month of usage?

- Link costs to usage. Which users most frequently access the system, and are they local?

- Determine the extent of local usage. What percentage of existing users actually dial in from within a local call?

- Determine local share of aggregate usage. Even if your local user base represents only a small percentage of overall remote users, if they consume more (or fewer) hours than long-distance users, this difference will affect overall potential cost savings.

At Your Service

No matter how much due diligence is done in selecting the best provider, if the CEO can't get into the outsourcer's network after multiple tries, the blame will fall not on the provider but on the IT organization. That's why it's absolutely critical to negotiate a strong service level agreement (SLA) that clearly delineates the terms by which service is delivered. A good SLA also can help reduce support costs incurred later if service levels don't meet expectations (for example, if users face an inordinately high number of busy signals when trying to connect, the help desk is likely to be flooded with calls for assistance).

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Checks & Balances

Conversely, an ambiguous SLA can increase support costs.

A compelling, strong SLA consists of four principal elements:

1. Performance predictability and availability guarantees. This entails back-end network availability guarantees, dial port availability and latency or throughput guarantees. A good example of outsourcer guarantees would be 99.95 percent back-end network availability, 99 percent dial availability and 150-millisecond latency. The point to stress here is that dial guarantees should measure overall dial availability based on your user population, as opposed to general networkwide statistics. The network as a whole may have 99.95 percent dial availability, but that figure can gloss over call failures that individuals at your organization experienced.

2. Support guarantees. The provider should document guaranteed response times and procedures for reporting and resolving different classifications of problems (for example, minor dial access problems that affect only an individual or a small group of users versus more serious back-end network connectivity failures, which would knock out every user).

3. Reporting. The provider should deliver monthly reports to the client's IT department, documenting individual user activity, troubles or failed connections broken out by division or business unit or any other method. Additionally, these reports should factor in the end-user experience, preferably by gathering client-centric data from one or more PC-based data collection utilities available on the market.

4. Recourse. Each individual guarantee should have a service credit tied to it so that noncompliance results in rebates of service fees and an option to back out of a multiyear contract with no penalties if noncompliance is not resolved within a certain agreed-upon amount of time (see number two above).

The Impact of the Internet

The Internet looms large as a potential panacea to remote access spending

woes, with its ubiquitous access and low price points—the lure of multiple, flat rate, \$25-per-month accounts is substantial. However, Giga has found that using the Internet for remote access saves a significant amount of money only when the per-user access hours are very high (for example, 30 hours or more per

costs in many cases outweigh the access cost benefits.

There are other costs, more difficult to quantify, but significant nonetheless. The Internet is an unpredictable network, and applications sensitive to delay do not perform consistently well over an Internet-based connection. We recom-

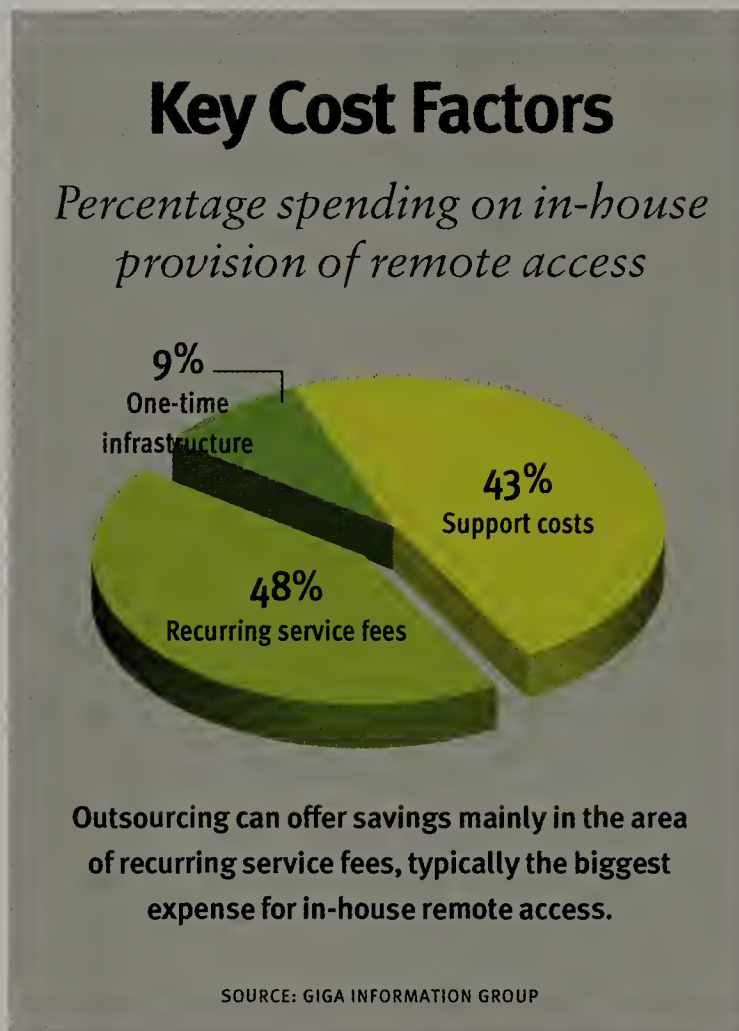
mend that CIOs think very carefully about the current and future application set that mobile workers will rely on and map the transmission speed required for each application. For example, users accessing client/server applications may encounter widely variable performance, thus generating additional calls to the help desk, while users of e-mail or Web browsers may not notice a difference.

Finally, security issues are not trifling. Proper, strong (two-factor) authentication is an absolute must when using the Internet. Additionally, we strongly encourage data encryption. Overall, the sealed-tight security perimeter that your security team has spent years honing can be obliterated in one fell swoop if someone drops an improperly configured VPN access concentrator onto the network. It's important to spend time familiarizing

key personnel with emerging security standards and to make sure the security team is involved from the very start of any project to provide remote access via Internet-based methods.

Outsourcing can be a bane or a blessing, depending upon the level of upfront preparation. The opportunity to free up precious talented network resources from tedious, mind-numbing modem management is the most significant motivator to outsourcing. But don't let that blind you to the work of assuring a reliable, cost-effective partnership—do the work upfront, and you'll be rewarded with cost savings and a happier IT workforce. **CIO**

Kiran Narsu is a vice president and senior analyst at Giga Information Group Inc. in Norwalk, Conn., and can be reached via e-mail at knarsu@gigaweb.com.



month per user). At lower aggregate usage rates, the Internet offers only incremental savings.

This disparity is due largely to the increased costs to deploy, support and manage the security infrastructure required to maintain secure access to sensitive resources while using an untrusted, public IP network fabric. For example, IT must procure, configure and manage VPN access concentrator equipment as well as a facility to manage strong user authentication. Moreover, additional client components are required, such as VPN software to handle encryption and tunneling. These components often add a significant amount of time spent on configuration and first-time training costs to the mix. They are also likely to generate additional calls to the help desk due to their greater complexity. Subsequently, for low per-user access hours, the additional



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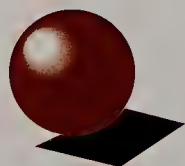
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What Is E-Commerce?

IN THE GOOD OLD DAYS, BUSINESS WAS PRETTY simple. I had a pig, you had some wool; we showed up at the market and haggled, then I went home to knit a cardigan while you whomped up some BBQ.

Nowadays we don't have to show up at the market, and we don't even need physical goods or currency to conduct business. Electronic commerce is the most recent step in the evolution of business transactions. It replaces (or augments) the swapping of money or goods with the exchange of information from computer to computer.

Give me some examples. Electronic commerce, or e-commerce, is a very broad term. E-commerce conducted between businesses differs from that carried out between a business and its consumers.

For business-to-consumer e-commerce, the Web has become the dominant pipeline. Think Amazon.com. The company offers lots of books for sale on its Web site. Consumers find what they like, type in their credit card number and unpack the books a few days later. Conducting individual stock trades, moving money from checking to savings or tracking an overnight package delivery via the Internet are other examples.

Business-to-business e-commerce takes many forms, some of which have been around for years. Electronic data interchange (EDI) is a format for exchanging business information over private networks. It was created to automate and speed the exchange of information between companies that regularly did business together. For example, on Tuesday your computer can



automatically tell my computer that you've shipped the 500 pallets of wool I ordered. Then on Wednesday my computer acknowledges your shipping confirmation and tells you that I'll mail you a few thousand pigs on Thursday. No money actually changed hands electronically here but plenty of business data did. If your business and my business do transactions like this often, the automated system beats having our clerks stand by the fax machine every day and then retype the information they receive into our respective computer systems.

EDI is still used, and there are many other mechanisms for business interaction, such as electronic catalogs and electronic payment systems. The Web plays an expanding role just as it does in consumer e-commerce. For instance, you might let your office-supply provider put an ordering page on your intranet.

What are the pros and cons of electronic commerce?

E-commerce is attractive because it reduces the cost of doing business. Sending a few bytes of data over a network is cheaper, faster and more convenient than sending a messenger or even making a phone call. The primary concern is security. The Internet is very public, and many people hesitate to send sensitive data over the wires where it might be intercepted by nefarious third parties. But with so many organizations excited about the benefits of e-commerce, plenty of people are working on resolving the security issues. —Derek Slater

Buzzwords

EFT: Electronic fund transfer. Moving value (money) between accounts electronically.

Encryption: The encoding of data such that only the desired recipients can decode it. It provides protection when transmitting sensitive data such as credit card numbers over public wires like the

Internet. (See "What's Encryption?" *CIO* Section 2, March 15, 1999.)

SET: Secure electronic transactions. A standard for safe e-commerce developed by Visa, MasterCard and others.

SSL: Secure sockets layer. An early and now prevalent security and privacy mechanism for the Web.

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We call it ExpressDelivery™ and that's not just a name—it's a fact. We deliver solutions to our customers up to two times faster than our competition. The secret is our powerful, automated project methodology, which can significantly accelerate and enhance deployments of all kinds of large-scale information technology projects. It's also extensible to other types of integration services, including ERP rollouts, deployment of electronic commerce solutions, and sophisticated IT implementations.

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